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EVERY MAN

HIS OWN CATTLE DOCTOR;

CONTAINING THE

CAUSES, SYMPTOMS, AND TREATMENT OF ALL THE
DISEASES INCIDENT TO

OXEN, SHEEP, SWINE, POULTRY, AND RABBITS.

35.

BY FRANCIS CLATER,
AUTHOR OF "EVERY MAN HIS OWN FARRIER."

THE SEVENTH EDITION,

REVISED, AND ALMOST RE-WRITTEN, BY AN EMINENT PRACTITIONER OF
HORSE AND CATTLE MEDICINE.

LONDON:—PRINTED FOR BALDWIN & CRADOCK;
SIMPKIN & MARSHALL; AND HOULSTON & SON.

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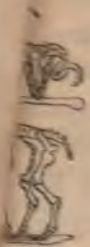

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the University of London at least, and a knowledge of this branch of veterinary medicine has wonderfully increased.

Under such circumstances the proprietors of this work have endeavoured to discharge their duty to the public. A new edition being required they have obtained the assistance of an eminent practitioner of both horse and cattle medicine, who, while he has retained all that was useful in the former edition, (and there was a great deal that was truly valuable, and particularly with regard to the symptoms of diseases), has endeavoured to keep pace with the progress of the art. The book is in a manner re-written, and the additions on the diseases of swine, poultry, and rabbits, now for the first time thrown into a regular and scientific form, in the English language, will be found peculiarly valuable. The List of Drugs used in veterinary practice will be exceedingly useful, not merely to the veterinary surgeon, but to every proprietor of cattle and sheep, and even of the inferior animals.

June, 1832.

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INTRODUCTION.

ANATOMY AND PHYSIOLOGY

OF

NEAT CATTLE.

THE term Neat Cattle comprehends all the varieties of the Ox, whose distinguishing characteristics are: no upper foreteeth, but eight cutting teeth in the lower jaw; the muzzle large; the forehead square, with the horns growing from the upper edges or sides of it; the neck short, with no mane; the breast and shoulders deep, and with a pendulous skin along the lower side of the neck, called the dew-lap; thirteen pairs of ribs; tail long; udder with four teats, in a square; and feet cloven.

The *bones* are the most solid portions of the body, and are designed to sustain the soft parts, to give shape to the whole animal, and to protect some important organs, as the brain, lungs, &c. from injury.

The bones, though solid, are as perfectly organised as any other part of the body, having

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for grinding the food, and so hard that they retain this irregular appearance to extreme old age.

The teeth, although of firmer structure than the rest of the bones, are also plentifully supplied with nerves and blood vessels.

How to ascertain the Age of Neat Cattle by their Teeth.—The calf is usually born with two fore or cutting teeth, and at a month old has the whole eight up. The age is then guessed at by the wearing down of these teeth until the calf is eight months old, when they begin also to become narrower and smaller. At eight months the two centre teeth are smaller than the rest; and from that time until eighteen months the others gradually diminish, until the whole are very considerably lessened in size and stand apart from each other.

At two years' old the two middle teeth are pushed out, and succeeded by two permanent ones; at three there are four permanent ones; six at four years; and all the eight at five, when the animal is said to be full-mouthed; but it is not actually so until six years old, when all the eight are level.

A good judge of cattle will, however, determine the age with considerable accuracy for many years after that. From six to nine he will be guided by the wearing down of the teeth, and after that by the diminution in their bulk, as in the milk teeth. At nine the two middle fore teeth are evidently smaller and narrower than the rest; at ten the two next are so; and so on until twelve, when, like the steer of two years old, the teeth again begin to stand singularly apart from each other.

Age by the Horns.—Until three years old the horn is smooth and even; a portion of it then drops off, and is not renewed; and, about the same time, a wrinkle or circle of thicker horn begins to be formed around the base. This is fully completed in a twelvemonth, when another begins to appear, so that if the perfect rings or circles are counted, and three added to them, the age of the beast will be ascertained. These rings, however, are not always clear and distinct, and it is very easy with a rasp to remove, at least to the unpractised eye, one or two of them, when the animal begins to be unmarketably old. The observation of the teeth is the most satisfactory, and the purchaser cannot well be cheated there.

Young Cattle are, for the most part, best understood by the following names:—The Bull, while sucking, is called a *Bull-Calf;* and from one to two years old a *Stirk* or a *Yearling Bull;* every year afterwards he is called a Bull of three, four, five, and six years old, beyond which period he becomes aged. A young castrated male, after the first year, is called a *Stot-Calf* or *Stirk-Stot,* and then a *Steer;* at four years old he receives the name of a *Bullock.* A female at the first is called a *Quey-Calf;* and then a *Heifer* till the age of four years; she afterwards takes the name of a *cow*, which is retained as long as she lives.

The *Trunk* is composed of the spine, pelvis, and thorax or chest.

The *Spine*, or back-bone, extends from the skull to the end of the rump, where the tail commences. It is composed of a column of bones, thirty-one in number, bound together by exceedingly strong ligaments, and between each of which an elastic cartilaginous substance is interposed, and thus constituting so many joints, with no great degree of motion in each, but altogether presenting a pliancy sufficient for the purposes of the animal, with all the strength that can be required. Each bone is perforated in the centre, and a canal is formed, which conveys along the whole extent of the spine that prolongation of the brain called the spinal marrow. The tail, which is the continuation of the spine, is longer than in the horse, and contains fifteen or sixteen bones.

The *Pelvis* is the posterior bony part of the trunk. It consists of the rump bone above, and two large, broad, and irregular-shaped bones on each side of it. The upper and by far the greater portion of these two irregular-shaped bones are termed the *haunches*, and the two large protuberances near to the hip joint are commonly called the *huggens*. These present a far more rugged outline than in the horse, and are particularly prominent in those breeds of cattle that are good milkers; but the cattle that fatten more kindly have comparatively little protuberance of the huckle bones.

The *Thorax* or *Chest* is the large bony cavity containing the heart and lungs. It is formed of the thirteen rack bones of the back, thirteen ribs on each side, and the breast-bone below and before. The ribs are so articulated with the spine as to allow of some little motion in respiration. The heart and lungs are, by means of the chest, surrounded and defended from external injuries. It is of much importance that the chest should be wide and full, and, at the same time, deep in the girth.

The Fore Legs.—The *Shoulder Blade* is a broad, flat, and triangular-shaped bone, situated on the outside of the fore ribs. It has a cavity at its lower end for admitting the round head of the shoulder bone. The shoulder blade is comparatively larger and more upright in the ox than in the horse. It is, however, a fault when the shoulders are too heavy; for there is then generally a deficiency about the hips, where the meat is finer and more valuable.

The *Shoulder Bone* is a short and very strong bone extending from the cup of the shoulder blade to the fore arm.

The *Leg Bone*, or *Fore Arm*, is situated between the shoulder bone and knee, and is the longest bone of the fore extremities. At the upper and back part of it there is a process called the *elbow*. The fore arm should be large and muscular, and regularly tapering towards the knee.

The *Knee* consists of two rows of small bones, forming a compound joint of considerable strength, and allowing likewise of extensive motion.

The *Fore Leg*, or *Shank*, reaches from the knee to the two great pastern bones. It is of great consequence that it should be clean, fine, short, and small..

The leg is divided at the bottom of the shank-bone, and there are two sets of pasterns, and two hoofs, to each leg. The pasterns should be small, and not too long; the feet, especially in working oxen, should point straight forward, and should be sound; and they should not be too close to each other, for this would indicate a narrow chest that would be unfavourable to speedy fattening.

The Hind Legs.—The *Thigh Bone* is a large and rather short bone, extending from the cup-like cavity of the hip-bone to the stifle. It is inclined obliquely forwards, and its lower end articulates with the leg bone at the stifle. This part constitutes the quarters, which should be deep and large. The longer the thigh-bone is, compared with those below it, the better; indeed, it is of advantage that the flesh should extend down even to the hocks.

The *Leg Bone*, in neat cattle and in the horse, is commonly called the thigh bone, from its situation in respect to the body of the animal. The leg bone reaches from the stifle to the hock, inclining obliquely backwards.

The *Hock* is a compound joint, being, like the knee of the fore extremities, composed of two rows of small bones. The hocks naturally approach each other much nearer in the ox than in the horse, and the hind legs diverge from each other below the hock, and stand considerably apart. In some cattle, however, this is carried to such an extent as to become a great deformity, and indicates weakness and unthriftiness.

It will be unnecessary to describe the remaining bones of the hind leg and foot, as they closely resemble those of the fore leg, and have also the same names.

The Skin.—The hide or skin consists of three layers; the first and outermost called the *scarf skin*, the middle *mucous substance*, and the innermost the *true skin*.

The true skin is a thick, dense, and elastic substance, and is that from which leather is made. It has numerous minute blood-vessels and nerves and consequently cannot be cut into without drawing blood, and giving pain to the animal.

The *Mucous Substance* is thin, delicate, and soft, resembling in texture fine net-work. It is this integument that gives colour to the complexion in human subjects: in the Negro it is black; in the Mulatto yellowish; and in Europeans more or less white. It is, however, precisely of the same hue in all oxen, whatever be the colour of the hair. It adheres more firmly to the scarf skin than to the true skin, and separates with it, when the hide is prepared by the tanners.

The *Scarf Skin* is the uppermost layer, and reaches over the whole external surface of the body. It is insensible, being thicker on some parts than on others, as on the back and legs, and it defends the true skin from much injury. The scarf skin is separated from the parts beneath in the act of blistering.

The Hair.—The skin is covered with hair, which is not only an ornament to the beast, but tends to keep the body warm. The eye-lashes and the hair within the ears seem principally designed to protect these parts from insects, moisture, or cold. The hairs at the end of the tail are longer than those of the rest of the body, the better to drive insects away from the skin. The hairs arise from bulbous extremities in the skin, and they receive their nourishment from these roots. The feeling of the skin, and the appearance of the hair, should be carefully observed. A softness and suppleness of the skin, and a kind of glossiness in the coat, not only indicate present health, but a disposition to thrive; while a hard dry skin, clinging to the ribs, and a coat staring in every direction, show that there is something wrong in the constitution, and that it will be labour in vain to attempt to fatten such a beast.

Immediately under the skin is the *fleshy pannicle*, or *rhine*. It is a thin muscle, extending over the whole of the trunk, and partly down the extremities. It is well supplied with nerves, and capable of very extensive motion, and its chief use is to corrugate the skin for the purpose of shaking off flies, or any thing that may annoy the animal.

The Fat.—On removing the hide and fleshy pannicle the fat comes into view, which is sometimes in considerable quantity, particularly on the rump, loins, and ribs. There are also layers of it, in beasts of good condition, not only between the muscles, but the fibres of the same muscle, giving a peculiar marbled appearance to the flesh.

On the inside the kidneys are chiefly surrounded with it; the omentum, or caul, contains a large quantity of it, and there is, also, a great deal about the intestines. The fat is contained in innumerable cells, formed of a thin membrane. It guards many parts that would be injured by pressure, fills up a variety of interstices, and forms a reservoir of nutritive matter for the support of the constitution under any accidental want of nourishment.

Connected with the fat is the *cellular membrane*, formed likewise of membranous cells, but which communicate with each other through the whole of the body. We have sufficient but disgusting proof of this in the blowing up of the calf just killed. The crackling heard when pressing on the skin of cattle labouring under inflammatory fever is another proof, for the gas which was produced by the commencement of putrefaction is forced into the neighbouring cells.

The cellular membrane is the connecting medium between almost all the component parts of the frame.

The Muscles.—The muscles are cords by the tightening or contraction of which the various parts of the body are moved. The muscles that are attached to the limbs are a collection of red-coloured fibrils parallel to, or laid alongside of each other. They arise from some fixed point, and are inserted either by a diminution of their substance, or in the form of a tendon, into a bone or part that is moveable. Nervous fibrils are sent to all these muscles from the spinal cord; and when the nervous influence is communicated to them through the medium of these fibrils, they contract or shorten, and the bone, or moveable part into which the tendon is inserted, is moved. If both the parts from which they arise, and into which they are inserted, are moveable, both are acted upon and change their place; and as the nervous influence is directed by the will, the animal is enabled to move and act as it pleases.

There are other muscles, as those of the heart and the intestines, which are moved by nervous influence not arising from the spinal cord and the brain, and not under the influence of the will. It is proper that the powers of circulation and digestion should be perfectly independent of the will. The sources whence these powers are derived will be presently spoken of.

The Brain.—The brain is a pulpy substance contained in the cavity of the skull. It is defended from external injuries by the bones of the skull, and yet more completely secured by three membranes or coats, with which it is invested, and on which the blood-vessels that nourish the brain ramify before they enter into the substance of it. The brain, and the spinal marrow, which is a continuation of the brain, hold correspondence with the whole body, imparting, by means of the nerves arising from them, sense to every part of the body, and motion to those that are capable of voluntary action.

The five senses, viz. *vision*, *hearing*, *feeling*, *tasting*, and *smelling*, so necessary to the animal's existence and well-being, are all situated about the head, not far distant from the brain. The organs of these senses are the eyes, ears, lips, the tongue, and the internal parts of the nose. These have nerves sent to them from the brain, by which the impressions made upon them by external objects are immediately communicated to the brain, and the animal is rendered conscious of surrounding objects, and their forms and qualities.

Nine pairs of nerves arise from the base of the brain, and proceed, through holes in the skull, to the face and head principally, although some wander farther, for the purposes of feeling and motion. The *first pair* are the nerves of smelling; they pursue a short course to the nose. The *second pair* go to the eyes, and are the nerves of vision: the *third* and *fourth pairs* are distributed to the muscles that move the globe of the eye. The *fifth pair* are very extensive nerves; they divide into three separate branches, which ramify into numerous filaments or twigs, and are distributed over the whole of the face, and in some degree give the various muscles the power of motion, but more particularly confer on the parts to which they go the faculty of feeling. The *sixth pair* go to the muscles of the eye. Part of the *seventh pair* is distributed over the internal parts of the ear, and on these depend the sense of hearing: the other portion is that from which the muscles of the face mainly derive their power of motion. The *eighth pair* are principally distributed over the organs contained in the chest and belly: they give the power of motion, but motion altogether independent of the will, and they have nothing to do with sensation. The *ninth pair* go to the tongue, and give it the faculty of taste.

These nine pairs of nerves may be readily seen proceeding from the brain by gradually raising it from the fore part of the cavity of the skull, when they will appear in regular succession.

The Spinal Marrow.—When the brain passes out through the large opening at the back part of the skull into the canal of the spine, it is called the *spinal marrow*. It extends through the whole length of the back-bone, and gives origin to many nerves, which pass through notches formed between the junction of each of the rack bones, and go to be distributed to the exterior parts of the trunk, the fore and hind extremities, and to some of the internal organs of the body; and it is by the influence of these nerves that every part below the head feels and moves.

The spinal marrow is so essential to animal existence, that life is extinguished when a knife is plunged into it, which is sometimes done by butchers in slaughtering the animal.

The Organs of Circulation.—Every part of the body is supplied with blood by means of the heart and the vessels arising from it; and the regular course in which it flows from and to the heart again is denominated the *circulation* of the *blood*.

The *Heart* is situated about the middle of the chest, rather inclining to the left side, and rests upon the breast-bone. It is contained in a strong, dense, and fatty membrane, the internal surface of which is smooth and lubricated with a transparent fluid, thrown out from its minute vessels.

The heart may be considered as double; and it consists of two cavities on either side. The upper one, on the right side, the *auricle*, so called from its supposed resemblance to a dog's ear, receives the blood which has circulated through the frame, and pours it into the lower one, the *ventricle*. As soon as that is filled, it contracts upon its contents, and, as it closes, a membrane or valve rises, which prevents the return of the blood into the auricle, and forces it into vessels that carry it into the lungs, where it undergoes that purification which is necessary to sustain the life of the animal. Having been thus purified, it is returned to the heart, and enters the left auricle; thence it is poured into the left ventricle, and, that contracting, and a similar membrane or valve rising, to prevent its flowing back into the auricle, it is sent into the main trunk of the arteries, and thus distributed over the whole of the frame.

The blood flows through the arteries by the force impressed upon it by the heart. This is felt in the pulsations of the arteries, which correspond with the contractions of the heart, and indicate not only the number but the nature of these contractions, whether propelling a greater or smaller quantity of blood. By the number and the force of the pulsations is the degree of fever indicated with considerable certainty. The heat of the mouth, and of the base of the horns, will be important guides; but a much safer one, and more clearly ascertaining the extent and the nature of the fever, is the action of the heart, faithfully represented by the pulse. Wherever the finger can be placed on an artery that is not too thickly covered by cellular membrane, or fat, and that has some firm substance beneath, the pulse may be felt; but most conveniently so where, at the back part of the lower jaw, the artery comes from the channel between the jaws, and passes over the edge of the jaw-bone, to ramify on the face.

The natural pulse of the full-grown ox varies from 42 to 45 beats in a minute: if it rises above 50 there is fever in proportion to the increased number. A number much below 40 indicates sluggishness of the circulation, or debility. There are other circumstances, however, to be taken into the account, —as the force or the weakness of the heart's action, —strong and bounding at the beginning of inflammatory fever, and weak and scarcely to be felt when that fever is assuming a putrid form. The regularity or irregularity of the pulse is also an important consideration as characterising the kind of irritability under which the heart labours. They who have to do with cattle will find it of immense advantage to study the pulse, and especially in reference to the propriety of bleeding; for a large bleeding will, in some cases, cut the disease short at once: at other times it will destroy the remaining strength of the animal, and ensure and hasten its death.

The blood flows through the arteries principally by the impulsive power of the heart. The arteries, however, possess a controlling influence independent of the heart, and can, under circumstances of necessity or disease, supply a deficiency of action in the heart, or neutralize its too violent efforts.

At the termination of the arteries, and branching from them at every point of their course, are other vessels as small as a hair, or a thousand times smaller, through which the blood must find its way. These are the *capillaries*, and in them, or in the glands into which they enter, or which they compose, all the important offices of secretion and nutrition are performed. These offices being discharged, and the various portions of the frame being built up, the blood is materially changed. From being of a scarlet colour it becomes black; from being capable of supporting life it becomes poisonous; from arterial it becomes venous; and these capillary vessels running into each other, and gradually enlarging, we begin to recognize the veins. The veins commence where the arteries terminate, and by them the black blood is collected, and carried back to the heart, to be thence pumped into the lungs, for the purpose of re-purification.

The blood traverses the veins also by the power of the heart, but exerted in a different way. When the ventricle of the heart, after having contracted upon its contents, opens again, it forms a vacuum into which the neighbouring blood flows by a mechanical principle, viz. the pressure of the atmosphere. The fire-engine is supplied with water from the reservoir by the same principle, although the pipe through which it flows should be a quarter of a mile in length. Beside this, where there are muscles by the action of which the vein may be compressed, provision is made that the flow of blood shall be assisted and not retarded, for there are numerous membranous valves, which open in the natural direction of the current, and would close if the current were to take a retrograde course. All the veins connected with the muscles are abundantly supplied with such valves, so that, by every contraction of the muscle, or motion of the limb, the blood is forced on more rapidly in its natural course, and the possibility of retrograding prevented. This accounts for the increased flow of blood on exercise, and the greater rapidity with which the blood escapes in bleeding, when the jaw of the ox is moved by introducing the finger into the mouth.

The Organs of Respiration. — Respiration is so absolutely essential to the life of quadrupeds, that, if it be suspended for a few minutes, the animal dies suffocated. The act of respiration is the alternate reception and expulsion of air into and form the lungs, and, during which, the blood traverses a set of vessels in the lungs, where it is exposed to the action of this air, and changed by it, and rendered capable of supporting animal life. The air which is to effect a salutary change in the blood is received partly through the mouth, but mostly through the nostril in cattle, and enters

The *Windpipe*, a long tube situated in the fore part of the neck, and leading from the back of the mouth to the lungs. On the top of it is a triangular cartilaginous substance, which permits the passage of the air either way, but closes the mouth of the windpipe in the act of swallowing, and so prevents any substance from getting into this tube, and annoying, or perhaps destroying, the animal.

The windpipe consists of numerous circular rings formed of dense cartilage, and these are connected together by a strong ligamentous substance, which is very elastic: this peculiar structure not only renders the windpipe very flexible, but keeps it constantly open. The whole passage is lubricated with a viscid fluid, secreted from the membrane lining its internal surface.

Immediately before it arrives at the lungs, the windpipe divides into two distinct tubes, and these, as soon as they enter into the lungs, subdivide until they are too minute to be traced by the naked eye, and at length terminate in an innumerable series of minute cells. Upon the membrane lining these cells the vessels which have conveyed the venous blood to the lungs ramify, and there is nothing interposed between the air and the blood but the membrane forming the cells, and the thin covering of the blood-vessels.

The air is introduced into these cells in the following manner:—The chest and the belly are divided from each other by a very strong muscular expansion called the *diaphragm*, or midriff, or skirt. In its natural state it is of an arched form, and bulges considerably into the chest. If it be excited to action, it contracts; it becomes straighter; the bulging into the chest is diminished, and its cavity proportionally increased; and if, at the same time, the muscles which are between each rib, and which have the power to elevate or depress the ribs, likewise act and raise them, the cavity is yet more enlarged, and the consequence of this necessarily is, that there would, if possible, be a vacuum between the lungs and the walls of the chest. To prevent this, or, more properly speaking, forced by the inequality of atmospheric pressure thus produced, air rushes into the nose, passes down the windpipe, inflates and fills up the lungs, and is thus brought into contact with the blood. After a short time the muscular diaphragm and the muscles of the ribs cease to act, and the diaphragm begins to bulge again into the chest, and the ribs fall, and the cavity of the chest is contracted, and the lungs are squeezed into their former bulk, and the air which had entered is pressed out again.

A most important process, however, has been performed during this entrance and expulsion of the air. Both the air and the blood have been changed: the air has become poisonous, and the blood has become capable of supporting life. A great quantity of what used to be termed pure air, *oxygen*, is taken from that which was inhaled; a portion of it unites with the poison of the blood,—the carbon,—and forms carbonic acid gas,—fixed air,—and which is expelled when the air is returned; while another portion of it enters into the composition of the blood, and either remains there unchanged, or becomes combined with some of the multifarious substances that make up the blood. The air has taken carbon from the blood, and communicated oxygen to it.

This change, however, both of the air and the blood, is not so marked in the ox as in most other animals. He does not seem to have so much poison to get rid of, nor need he steal so much vital air from the atmosphere, and therefore the cow-house, however close, is seldom offensive. The breath of the cow is even pleasant, and consumptive persons have fancied that they have derived benefit from inhaling it.

The inside of the chest, and of the diaphragm, and also the whole external surface of the lungs, are covered by a smooth membrane called the *pleura*, which secretes a serous fluid, that in its natural quantity preserves the surfaces moist, and prevents friction, and in undue and unhealthy quantity constitutes dropsy of the chest.

The Organs of Digestion.—The food that neat cattle eat affords, by the process of digestion, a nutritious fluid of a milky colour, called chyle, which is absorbed into the system, and soon enters the circulating mass of blood, and becomes itself converted into blood, thereby repairing the waste that this fluid suffers in nourishing the body, and supplying the materials for all the strangely various secretions. The organs of digestion in neat cattle are more complicated than in the horse, or in man, for the latter have only one stomach, but these have four stomachs, which renders them more liable, particularly in their present domesticated state, to diseases of the digestive organs.

The gullet is a thick fleshy canal that receives the food from the mouth, or returns it to the mouth, and conveys it into a canal at the lower part of the throat. The gullet commences at the back part of the mouth, immediately behind the top of the windpipe, and passes by its side, and along the chest close to the spine, and through a large hole in the fleshy part of the skirt, or midriff.

The grass is cropped and chewed sufficiently to form it into a kind of pellet which can be swallowed. It then passes down the gullet, and arrives at that canal. This canal, if it were pursued, would lead on to the *manyplies* or third stomach; but its floor is curiously constructed. It is formed of two rounded muscular bands, which may be held together or divided;—which may form a tube through which a liquid will scarcely penetrate, and so carry on the food to the third stomach, or divide and suffer it to fall through into the *rumen* or paunch, of which, and of the *reticulum*, or second stomach, these bands form part of the roof.

The pellet of food passes down, and partly by its own weight, and partly also at the pleasure of the animal, breaks through the floor and enters into the paunch, and there it remains, and pellet after pellet descends until the paunch is nearly or quite filled. The animal then lies comfortably down. The food has all this time been macerating in the paunch, the inner membrane of which is lined with numerous little prominencies or paps, that secrete a mucous fluid; and not only so, but there has been a muscular action going forward: the food has been gradually turned about, and that which was swallowed first is ready to present itself first to be returned.

By a slightly convulsive act, a small portion sufficient to form a pellet of the proper size to be returned, is propelled from the paunch into the second stomach, which is connected with the first under the floor of the canal. That stomach is possessed of a strongly muscular coat, and it contracts strongly on this mass, and forms it into proper shape; and at the same time presses out of its honey-combs another mucous fluid by which the pellet is surrounded, to render its passage to the gullet more easy.

By another convulsive effort of the animal, the pellet is made to break through the floor of the canal, and carried to the base of the gullet; where it is embraced by the spiral muscles of that tube, and returned to the mouth. It might perhaps be more correctly said, that the same effort which sent the prepared pellet from the second stomach into the gullet to be re-chewed, forced a fresh portion from the paunch into the second stomach. The animal now ruminates at his leisure, and the pellet having been perfectly broken down and softened by an additional secretion from the glands of the mouth, is almost a semi-fluid mass, and, when it is again swallowed, either has not sufficient solidity to force itself through the floor of the canal, or the beast does not choose that it shall, and it passes on over the roof of the paunch and the honey-comb, and enters into the third stomach or manyplus.

A very important hint here suggests itself with regard to medicines, and which has not been sufficiently attended to by the cowleech or the veterinary surgeon. We may send medicine into what stomach we please. We may give it in a ball, and it will fall into the paunch, and thence go the round of all the stomachs; or it may be given in a fluid form, and the greater part of it passed at once into the third and fourth stomachs. That which is meant to have a speedy action on the constitution or the disease should be given in a fluid form. That which is particularly disagreeable should also be thus given, otherwise it will enter the paunch, and be returned again in the process of rumination, and disgust the animal, and, perhaps, cause rumination to cease at once. That would always be a dangerous proceeding, for the food retained in the paunch would soon begin to ferment, and become a new source of irritation and diseases.

The third stomach, called the *manyplus* or manyplies, or manyleaves, is, at its base, a continuation of the canal so often referred to, and through which fluid food would pass at once into the fourth stomach; but there are suspended from its roof numerous curious leaves, floating loose in the canal, and intercepting and taking up any thing that may have escaped the action of the teeth, and continues to retain a solid form. These leaves are studded with little hard prominencies on either side, and, these rubbing against each other, the hardest food is gradually reduced to a fit state for digestion. This being accomplished, the food arrives at last at the fourth or true digestive stomach, a long pouch or bag, more abundantly supplied than any of the others with blood vessels, and secreting the gastric juice, the principal agent in digestion, and by means of which the food is converted into a uniform half fluid mass, called chyme.

From the presence of this gastric juice, the fourth stomach has the property of curdling milk. The dried stomach or *maw* of calves is called rennet. It will be seen, as we go on, that this property of curdling milk, is, in some states of the stomach or the milk, an occasional source of disease.

The food being thus prepared, passes through the lower orifice of the stomach into the intestines; and these are of enormous length, that every particle of nutriment may be extracted. They are twenty-two times the length of the body in the ox. The food has not passed far into the first intestine when it undergoes a new change. The secretions from the liver and the pancreas—the bile and the pancreatic juice, mingle with the food; and at the same time, and possibly influenced by these, the mass which has passed the stomach begins to separate into two parts, the one a white matter, constituting the nutritive portion, and called the chyle,—the other, that which is afterwards to be expelled from the system. The separation is at first but partial; more and more nutritive matter is extracted as the mass rolls on, and, at length, nothing that is useful remains.

This nutritive matter, the *chyle*, is not suffered to pass far along the intestinal canal, but is taken up or absorbed by numerous minute vessels that open on the inside of the intestines, and is conveyed by them into the circulation, where it is mixed with the blood, converted into blood, and prepared for building up the various portions of the frame. All along the small intestines,—the *duodenum*, *jejunum*, and *ileum*,—this separation continues to be made, and these vessels at length convey away the useful portion of the food. The small intestines are more than 120 feet in length.

The residue, having arrived at the larger intestines, which now succeed, contains no longer anything that can be thus changed into chyle, and these vessels, the *lacteals*, are no longer found: but even here there are other vessels, *absorbents*, which take up the fluid parts of the fæces, and extract from them what may ultimately contribute to nutriment. It is on this account that when an animal is unable to eat, we can support him for a considerable period by means of nutritive fluids injected into the bowels, and which can only reach to the large intestines. In most herbivorous animals there is a provision made, by a curious cell-like structure of the *colon* and *cæcum*, the most considerable of the large intestines, for the retention of the residue of the food in them; but, in the ox and other ruminants, the food is so thoroughly prepared by the complicated mechanism of the four stomachs, and the course of the small intestines is so lengthened—more than double what it is in the horse—that this structure of the colon and cœcum is not needed, and they are neither of extraordinary size nor formed into cells.

All nutriment of every kind being extracted, and when the residue has reached the last intestine, the *rectum*, it is then hurried on to be expelled.

Several diseases to which the intestines of cattle are exposed having reference to, or being seated in, different coats or membranes of the intestines, it will be necessary to speak briefly of them. In the first place, they are all wrapped up in a very thin membrane or bag, yet one that possesses considerable strength, called the *peritoneum*. It secretes a serous fluid, and thus prevents friction in the natural motion of the bowels over or among each other, and, encircling them all, it retains each pretty much in its place, and restrains too extensive or dangerous motion. The outer coat of the intestines is composed of a reflection or expansion of this membrane, and is liable to a peculiar inflammation. The second coat is muscular, and is composed of a double layer of fibres, by the action of which the food is conveyed or pressed along the canal, and which is called the *peristaltic* motion; and the inner coat is the *mucous* one, so called from the jelly-like substance by which it is covered, or the *villous* coat, from its velvet-like construction, it is composed of innumerable glands pouring out this mucus, and which is the seat of inflammation in over-purging.

The *Mesentery*, that beautiful membrane by which the intestines are enfolded from beginning to end, and attached to each other, and retained in their respective situations, and through the folds of which the blood-vessels and nerves that supply the intestines, and the veins, and the lacteals pass, is only a duplicature of the peritoneum. In different parts of the mesentery, various glandular bodies are seen; they are the mesenteric glands, the precise use of which is not known, except that they are connected with the passage of the chyle. The enlargement or obstruction of them is sometimes attended with very serious disease, and even with death. The *omentum*, or *cawl*, is also a portion of the peritoneum. The use of it has never been satisfactorily explained.

The *Liver* is a large gland, of a dark-red colour, situated in the belly on the right side, and it secretes a bitter fluid named *bile*, or GALL. It receives the blood that returns from all the contents of the belly, and which is probably so loaded with carbon that it could not all be discharged by the lungs, for the quantity of atmospheric air that can be introduced into the lungs in the act of breathing would not contain sufficient oxygen for the purpose. The blood is, therefore, sent into the liver, where undergoes a process of purification to a certain extent. This inflammable matter, the carbon, is separated in the form of bile, and when that is conveyed into the bowels, in order that it may be expelled, it is rendered exceedingly useful there, either in separating the chyle, or quickening the passage of the food, or both. The yellows in cattle is caused either by too great an increase of bile, or by obstruction of it; and, in either case, an unnatural quantity of it would enter into the circulation.

The bile is received into a kind of reservoir called the gall-bladder, in which it is stored up for use; and, at the same time, probably, improved in activity by the absorption of some of the fluid parts of it.

The *pancreas*, or sweet-bread, is a large gland, of a whitish colour, adhering to the upper portion of the first small intestine, and which secretes a fluid-like saliva, termed the *pancreatic juice*, that is poured into the intestines, and assists in the process of digestion. Of the precise nature, however, of this fluid, or the manner in which digestion is promoted by it, we have no certain knowledge.

The *spleen*, or *milt*, is a large and oblong substance of a dark purple hue, situated upon the paunch, being between it and the midriff. Of the office, discharged by the spleen, we have no satisfactory information. It is, probably, a kind of reservoir for the reception of any fluid received into the paunch in greater quantity than the purposes of digestion require.

The Absorbents.—Every part of the body is continually changing. The worn-out portions are dissolved, and taken up by the absorbent vessels, and carried, like the chyle, into the circulation, and mingle with and form part of the blood, and are converted again into nutritive matter, or expelled by means of the liver, or in some other way. These absorbents, or, as they are sometimes called, *lymphatics*, are small transparent, elastic tubes, opening upon every surface, and every portion of the body, external or internal.

The trunks of the absorbents are arranged into two systems, one of them near the surface of the body, and the other more deeply seated; and both following the course of the neighbouring veins. They have valves like the veins, and pour their contents into the circulation at the same point with the veins.

The *lymphatic glands* form a prominent part of the absorbent system. They answer some valuable purpose, for every absorbent, in performing its course, passes through one or more of these glands. They are seen in the mesentery when the animal is opened, and they can be plainly felt in the neck and under the jaw.

The Blood.—The blood is incessantly circulating, in the heart and arteries and veins, and through every part of the body, and supplies materials for its nourishment and growth, and for the various secretions. The different parts of the system are constantly receiving and appropriating to themselves those elements of the blood which are proper to supply the waste they are sustaining from the necessary actions of life; consequently the health and vigour of the body require a new, daily, and liberal supply of fresh blood. That supply is principally derived from the chyle, which is separated from the food in the process of digestion.

Blood, received into a vessel in the act of bleeding, soon separates into two parts; one of which is fluid, and called *serum*, the other solid, and called *red clot*, or *cake*, or *crassamentum*.

Serum is the watery part of the blood, and surrounds the red clot. It contains several kinds of salts, and if heated to 160 degrees of Fahrenheit's thermometer coagulates like the white of an egg; but it has no appearance of being organised.

Red Clot, or *Crassamentum*, coagulates spontaneously; and is found to consist of two parts, namely, a fibrous substance, resembling very closely the muscular fibres, and a great number of extremely small red globules, which give colour to the blood. These red globules may be separated by macerating the red clot in water; the fibrous substance, sometimes called coagulable lymph, losing its redness, and becoming nearly white, while the red globules are dissolved in the water.

Secretion.—There are separated from the general mass of blood, by certain organs denominated glands, different kinds of fluids, subservient to various purposes; and the process by which they are formed is termed *secretion*.

The glands on the internal coat of the stomach secrete the gastric juice, the liver secretes the bile, and the saliva is derived from the glands of the mouth. In some cases it seems to be a mere filtration or separation of certain substances from the blood; in others it is the formation of a new substance that did not previously exist there. With regard to the structure of the glands, there is considerable obscurity. They consist of a great number of small arteries which convey the blood to be operated upon, and of corresponding minute veins, to return the blood when the operation is complete; but of the intermediate substances or sets of vessels, and of the nature of the action which is going forward in them, we are perfectly ignorant.

The secretions are exceedingly numerous, and very different in their character; but they are all subservient to some useful purpose. The most important secretion connected with the cow is that of milk, which is formed in that large and complicated gland, the udder, to which so many blood-vessels are directed. The function of the glands is much affected by disease. The secretion is sometimes suspended. In dropping after calving, and in constipation, the secretions of the udder and the bowels partially or entirely cease. At other times they are considerably increased. In purging, the glandular follicles of the bowels pour out a great quantity of aqueous fluid. Occasionally the character of the secretion is changed. The discharge of mucus from the nose, and the fluid discharge from the bowels in dysentery, are very acrid and irritating.

Perspiration.—A fluid is continually passing off from the surface of the body in the form of an invisible vapour; and when, from exercise or other causes, the quantity is increased, it becomes visible like a thick steam, and collects upon the skin and wets the hair, or falls in drops. This is the perspiration or sweat. It is necessary to health that a considerable portion of fluid should escape in this way. When, from sudden exposure to cold, this discharge from the skin is suppressed, either generally, or on a particular part, rheumatism, or hoose, or catarrh, is the result. Various states of the constitution, and various diseases will also materially influence the discharge. A cessation of it is by turns the consequence and the cause of disease. When the coat stares, it is owing to the dryness of the skin from the stoppage of perspiration turning the hair in different ways; when the coat is smooth and glossy, it is owing to the perspiration rendering the skin moist and supple, and thus permitting the hair to take its natural direction. We thus judge with considerable accuracy of the health of the animal by the appearance of the coat, because in health the perspiration flows naturally, and in disease it is often suspended.

The Organs of Urine.—The *kidneys* are two in number, of an oblong shape, situated in the loins on each side of the spine, and are imbedded in fat. They are of a red colour, and divided externally into between twenty and thirty distinct lobes, or portions.

A great quantity of blood is continually circulating through them, and they, being glandular bodies, separate from it a fluid, called urine. The peculiar ingredient of the urine, *urea*, contains a great quantity of a poisonous substance or gas, called *nitrogen*. It would therefore seem that the kidney is the organ by which any dangerous excess of nitrogen in the constitution is removed. Beside the urea, nearly twenty different salts and compounds, more or less injurious, have been discovered; so that the kidney is a gland of immense importance in preventing the unhealthy accumulation of them. It likewise is ready to act instead of any other part of the frame that may happen to be diseased or out of order. When the absorbents are unable to carry off the fluid received into the stomach, or the lungs or the skin refuse to throw off their share of perspirable matter, the kidneys supply their place, and by an increased flow of urine prevent danger and disease.

The urine is conveyed from the kidneys into the bladder by two canals called the ureters, and being received into the bladder, it is retained there until a sufficient quantity is collected to excite that organ to contract, and to expel it from the body.

The Peritoneum and Cawl.—The *peritoneum* is a strong and extensive membrane, lining the internal surface of the belly, and covering all the organs contained therein. It secretes a fluid which keeps the surface of the intestines moist, and thus allows free motion between them; while, this membrane wrapping them on every side, each is kept in its proper situation, and strength and support are given to the whole.

The *Omentum*, or *Cawl*, is a broad and fatty membrane formed from the peritoneum, and particularly from those portions of it that are reflected from the paunch. It covers the four stomachs and some of the intestines. Its probable use is somewhat similar to that of the peritoneum, to support the intestines, and to prevent them from being injured in the various motions of the body.

The Uterus and Pregnancy.—Reaching from the external parts of generation in the cow, the body of it projecting beyond the bladder, and the two prolongations or horns of it floating loose in the belly, is the uterus or womb, in which the unborn calf is contained and nourished. At the extremity of each of the horns of the womb is a small canal or tube, conducting to an oval body of the size of an egg, containing numerous little vesicles or bladders called ova, or eggs; and the collection of them is denominaed the *ovaries*. At the time of conception one of these ova escapes, and slowly descends the tube and enters the womb. It is the germ of the future animal, but scarcely larger than a pea. Arrived in the womb it floats there for a while, and at length becomes attached to some portion of it. When it descended it was enveloped by two membranes or coats, and two others now rapidly form over it from the uterus. They are exceedingly vascular, and by means of them, and the vessels proceeding from them, nourishment is conveyed to the fœtus, and the blood which has circulated through its little frame is purified.

At the second week of pregnancy the fœtus is become about the size of a walnut, but even then it has begun to assume its after form, and its little limbs are to be traced through the transparent membranes by which it is surrounded. At the fourth week it has attained the size of a mouse, and every limb is to be seen nearly perfect, although in miniature. The manner in which it is nourished is now likewise more evident. The fœtus is formed for what it is to be, and not with regard to its present situation. Many of its organs are of no use. It has eyes, but it sees not, and a mouth, but no food enters it; the lungs perform no office, and the stomach receives no nourishment; the blood of the mother, by means of the uterine arteries, enters the placenta, composed of some of the membranes that have been described, and is conveyed by the veins to the navel of the calf. Entering there, it is divided into two streams, one of which passes through the liver, and the other goes by the vena cava, and both arrive at the right auricle of the heart, and thence to the right ventricle, and thence, in the animal after birth, as has been described when speaking of the mechanism of the heart, to the lungs. The fœtus, however, breathes not, and he does not want to breathe, for its blood is purified in the placenta; therefore the blood is transmitted directly from the right to the left side of the heart, by a communication between the auricles. From the left side of the heart it is sent over the frame, thence it is conveyed by the umbilical arteries to the placenta to be purified, and is once more rendered fit for nutrient purposes.

In the cow and other ruminant animals there are a vast number of red prominences between the membranes, consisting of thousands of convolutions and ramifications of blood-vessels; as it were, more completely to purify the blood, and render it more fit for the nourishment and rapid growth of the quadrupeds that are destined to contribute to the food of man.

In the fourth month the fœtal calf is large, but the skin is not covered with hair. The body of the womb has now strangely increased, not by a distention of its parts, but by actual growth and addition to them. It extends beyond the horns, pushes away the intestines, and lies upon the muscles of the belly. About the sixth or seventh month the skin is covered with hair, and at the expiration of nine months the animal is sufficiently well formed and strong to change its mode of existence. The womb has now attained its greatest degree of distention; it becomes irritated, its muscular fibres begin to contract, labour comes on, and, assisted by the diaphragm and abdominal muscles, the calf and its membranes are expelled, or the young animal is born.

As the pelvis, from its horizontal position, may safely be much larger in these animals than in the human body, and the passage is likewise straighter, parturition is, generally speaking, not dangerous or very painful in the quadruped. Difficult labours, however, and false presentations will sometimes occur, of which notice will be taken in the proper place.

The Udder.—The *udder* is a large glandular organ, destined to secrete milk for the nourishment of the young calf. As the progeny of the cow is confined to one, or at most to two at a birth, the udder would perhaps have been only double, as in the mare; but this animal was intended to afford the greater part of her milk for the nourishment of man, and therefore the bag is quadruple, or there are four indistinct partitions of it.

The udder is made up of numerous minute

branches of arteries, from the extremities of which the milk is secreted. This secretion is always going on. The bag of a milch cow is always gradually filling, but yet a considerable proportion of that which is given is secreted at the time; for it must be evident to the most careless observer, that the udder could not possibly contain one half of the milk which a good dairy-cow will sometimes yield. The milk is also yielded in greater or lesser quantities at the will of the animal. A cow will sometimes not give a drop of milk to a stranger-calf, while to her own she will pour it out in abundance. In this she is perhaps assisted by the valves which are placed over the orifice of each teat, to prevent its running out. When the calf is sucking, he is seen to push the teat upward, in order to lift these valves; and the dexterous milk-maid is well acquainted with the method of accomplishing the same object.

ON

THE DISEASES

OF

HORNED CATTLE.

CHAP. I.

INFLAMMATION.

INFLAMMATION is the most frequent diseased condition to which neat cattle are subject. This may be owing to their peculiar organization in respect to the four stomachs, in which the food is completely prepared to render all its nutriment. They were necessary in the animals who are to afford us so much liquid nutriment while living, and good fat and flesh when dead, and who must therefore be disposed to a redundancy of blood in the system, and consequently to inflammation.

External inflammation is known by the part being *swollen*, *tender*, and *hotter* than in its natural state. In garget or downfall of the udder, which is an inflammation of one or more quarters of the bag, the affected parts are swollen, tender, and hot.

If the downfall be neglected, it is most likely that matter will form, which is one of the consequences of inflammation, or one of the methods by which the part, and the constitution generally, are relieved, and which may be denominated the *suppurative process*.

Should, however, the downfall be judiciously treated, the swelling subsides, and the heat and tenderness gradually vanish; the inflammation in this case is said to be *resolved*, which is most to be wished for, and should always be attempted in inflammatory complaints.

In black-leg, a disease frequent in young cattle, the affected part loses its sensibility, and becomes dark coloured, and is said to be *mortified*, and is or ought to be separated from the living portions around. Mortification is usually the result of *violent* inflammation, by which the texture of the parts is broken down, and their vitality destroyed.

External inflammation most frequently proceeds from wounds, or bruises, or other accidents to which cattle are liable. These produce different degrees of inflammation, according to the severity of the injury; and when it runs high, it affects the whole system, and very often brings on fever.

External inflammation is sometimes produced by causes which affect the whole system, but the chief mischief of which is determined to particular parts, from previous weakness in them, or disposition to take on inflammation. This is the case with inflammation of the udder of cows, or the joints of young cattle: the whole frame had been exposed to cold; but the udder of the cow that had lately calved was very much disposed to inflammation, and the joints of young cattle had not acquired their full strength. In inflammatory fever, also, the inflammation will settle in particular parts, as in the tongue in blain, and in the limbs in quarter evil.

The *swelling* of the inflamed part is principally to be ascribed to the increased quantity of blood passing through it. Every little vessel is distended by the additional fluid it is compelled to carry; and there is likewise a greater deposition of fluid and solid matter in the cellular texture of the inflamed part, for every little secretory vessel is doing increased duty in proportion to the blood with which it is supplied. In the minute ramifications of the vessels, the blood is changed from arterial to venous, and it is in the change of blood from arterial to venous that animal *heat* is extricated or produced. In inflammation, a great deal more than the natural quantity of blood is passing through these vessels; a great deal more is changed from arterial to venous; and a great deal more heat must necessarily be produced. The *tenderness* is caused by the unnatural distension of the vessels, and by their pressure, and that of the deposit of inflammation, on the neighbouring parts. The nerves of sensibility likewise unite very freely with the nerves of another order, that supply the capillaries, and when the nerves of the capillaries are irritated, the nerves of sensibility will become irritable too, and the part will become so tender as not to be touched without extreme pain.

Internal Inflammation.

Internal inflammation is characterised by other and often more indistinct symptoms. We can here seldom ascertain the heat or tenderness or swelling of the part, and can usually only judge of the complaint by the effect which it produces on the system. Every internal inflammation does, however, soon affect the system. There is no inflammation of any important internal part that is not quickly accompanied by fever, and that fever and the degree of it is easily ascertained, by the heat of the breath and mouth, and base of the horn, by the redness of the eye, and the frequency and hardness of the pulse, the loss of appetite, and, often, the cessation of rumination.

The symptoms of internal inflammation will be related as the inflammation of each part comes before us.

Whether inflammation be internal or external, resolution is to be attempted, or, in other words the inflammation is to be subdued.

When it seizes any important organ, as the *brain*, *lungs*, *bowels*, *kidneys*, *eyes*, *udder*, or *womb*, bleeding is to be immediately had recourse to; and, after bleeding, a purging drink is to be administered; and sometimes it is necessary to insert a seton in the dewlap.

In external inflammation from severe bruises, wounds, and other accidents, fomentation with warm water, poultices made of linseed meal, when they can be applied, and the purging drink (No. 2), give much relief. If external inflammation be considerable it will always be necessary to bleed the beast.

CHAP. II.

BLEEDING, ITS UTILITY—AND IN WHAT CASES NECESSARY.

Bleeding is a most useful and powerful remedy in the cure of inflammatory complaints. It lessens the quantity of blood in the vessels, and diminishes nervous power. The following are the chief diseases in which bleeding is required.

1. Where animals in a thriving state rub themselves until they fetch off the hair, and the spot is frequently covered with a dry scab; when at the same time the eyes appear dull, languid, red, or inflamed, the breath hot, and the veins puffed up, and considerably larger than usual.

In all kinds of inflammatory diseases, as of the *brain*, *lungs*, *kidneys*, *bowels*, *eyes*, *womb*, *bladder*, *shape*, and *downfall* in the udder or swelling of the joints.

3. In the disease called blain, and in which bleeding, not only general but local, and local far more than general, has the very best effect, the tumefaction in general almost immediately subsiding, and the beast speedily recovering.

4. When the glands or kernels between the jaws, or those of the throat, are enlarged, and especially if they are only recently affected, immediate recourse should be had to bleeding, or the lungs will probably become diseased, and consumptive hoose will be the consequence.

5. In bruises, hurts, wounds upon the head, strains in different parts, and all other accidents that may occur to the animal where there is reason to apprehend considerable inflammation, bleeding will be proper.

6. In violent catarrh or cold, bleeding is employed; but in slight cases a few fever drinks will restore the animal.

7. The yellows, when attended with feverish symptoms, or constipation of the bowels, requires bleeding.

The manner of performing this operation is too well known to require any description.

The *Fleam* is an instrument in general use for oxen, and the jugular or neck vein is that which is usually opened. Local bleeding is, however, in many cases particularly serviceable. In inflammation of the eye, the eye-vein is frequently cut; in foot-halt, we sometimes bleed at the toe; and in inflammation of the bowels, or the udder, or even of the chest, blood is advantageously taken from the milk vein.

The quantity of blood that it may be proper to take away at one time cannot here be determined, but must be regulated according to the size, strength, condition of the animal, and the disease under which he may labour at the time. In many inflammatory diseases too much can hardly be taken, provided the bleeding be stopped as soon as the animal appears likely to faint or to fall down. A strong healthy beast will bear the loss of five or six quarts of blood, without the least injury; larger cattle, that are attacked with inflammatory complaints, will bear a greater proportion to be taken; seven or eight quarts may then be abstracted with decided advantage: but when it is necessary to repeat the bleeding, the degree of fever and the strength of the beast will regulate the quantity. The blood should flow from a large orifice, as sudden depletion is far more powerful in its operation, than when the blood is suffered slowly to trickle down. The beast must *never be suffered to bleed upon the ground, but into a measure,* in order that the prescribed quantity may be taken; but it is right to add, that no absolute quantity of blood should if possible be prescribed, but the animal should be bled until the pulse faulters, or changes its character in the manner that we desire, or other circumstances show that the system is affected. The animal should not be permitted to drink cold water immediately after bleeding, nor to graze in the field: the former has sometimes induced troublesome catarrh, and the latter may cause the orifice to open again. If this operation be performed in the summer season, it will be best to fetch the cattle out of the pasture towards evening to bleed, and let them stand in the fold-yard all night; and the next morning drive them back to the field.

CHAP. III.

ON PHYSIC.

Purging medicines operate by increasing the evacuation of fæces from the bowels, and thus often remove a very considerable source of irritation; they increase the secretion of the exhalent vessels situated on the internal coat of the intestines, and thus, by producing watery stools, lessen the quantity of fluid circulating through the system; they divert the increased flow of the blood from the affected organ, and determine it to the bowels, which is well elucidated in red water; and they have a peculiar influence on the nervous system, augmenting the energy of the nerves distributed to the intestines, but diminishing it in other parts of the system.

The chief purgatives in use for neat cattle, are Glauber's salts, Epsom salts, Barbadoes or Cape aloes, Castor oil, and Sulphur. In obstinate constipation of the bowels, two or three drachms of gamboge in powder may be added with good effect. The doses of these are as follows; one pound of Glauber's, or Epsom salts, will purge a full sized beast; half an ounce, or six drachms of Aloes, are added to the salts in particular diseases. Where there is considerable fever, or the attack of fever is apprehended, there is no purgative so beneficial as the Epsom salts. In bad cases, twenty-four ounces may be given at a dose, and eight ounces every six hours afterwards, until their full effect is produced. One pint and a half of Castor oil is a common dose; but it is a very expensive and not always sure purgative. As an aperient, and in cases where there is no great degree of fever, and a violent purge is not required, there are few better things than Sulphur. Where nothing else is at hand, and the case is urgent, Common Salt is no contemptible medicine; a pound of it dissolved in water will produce a very fair purgative effect, but it should not be given if the animal labours under fever. The following are the cases in which purgative medicines are found useful:—

1. I have known some graziers who, when feeding

old cows (during summer), have given them a purging drink about every six weeks, by way of keeping off the downfall, which in general has had the desired effect, and has even caused them to fatten more rapidly.

2. A purging drink is very properly given to cows soon after calving, to prevent the milk fever.

3. Neat cattle are naturally of a greedy and ravenous disposition, and their appetite is hardly ever satisfied. Milch cows in particular, if feeding on herbage, or other food agreeable to their palate, will often continue to graze until they are in danger of suffocation. Thus the powers of digestion become over-burdened, and the animal appears dull and heavy, and feverish symptoms are induced. Purgatives will give the most effectual relief in these cases, and if the appetite does not soon return after the physic, a cordial ball will be useful in restoring it.

4. Cows that are turned into fresh pastures sometimes become bound in their body, in which case a purging drink must be immediately administered, and repeated every twelve hours, until the desired effect is obtained: a clyster should be given, if the first drink does not operate. If the costiveness is accompanied with pain and feverish symptoms, inflammation of the bowels is to be suspected, and must be treated accordingly.

5. When red-water is recent a purging drink or two will often completely remove it.

6. In the yellows it is generally necessary to give a purging drink, and after that cordial tonic drinks, to invigorate the digestive organs.

7. When medicines are given to prevent cows from slipping their calves, they are generally preceded by a purging drink.

8. In all the inflammatory complaints, which are mentioned in the last chapter, a purging drink is commonly administered after bleeding.

6. If external inflammation, occasioned by wounds, bruises, and other causes, runs high, and affects the whole system, purgative medicines are absolutely necessary.

CHAP. IV.

ON SETONING.

The utility of setoning for the cure of several diseases incident to neat cattle, cannot be doubted. There are several situations in which, if farmers did not adopt this precaution, they would lose great numbers of their young cattle with the black leg.

In certain counties, the hoose in calves is very prevalent and fatal; where it so happens, they should all be setoned before they are attacked by the disease; which will either lessen its violence or prevent it altogether.

In joint evil, I have frequently inserted a seton in the dewlap with decided good effect.

Setoning is often prescribed, in the course of this treatise, in inflammatory complaints, and it acts by exciting a new and artificial inflammation in the neighbourhood of the former one, and thus lessening its intensity. This proceeds partly on the principle of diverting to another part a portion of the blood which was determined to the original one, and likewise diverting a portion of the nervous influence or power which was concentrated on it; and partly in accordance with the generally received medical maxim, that no two violent inflammations, of different character, can exist in neighbouring parts at the same time; and that in proportion to the intensity of the one the other will be diminished.

By the discharge which it produces a seton will likewise relieve the overloaded vessels of a neighbouring inflamed part.

Mode of inserting a Seton.—The seton is commonly made of tow and horse hair plaited together, or cord or coarse tape alone. It should be tolerably thick, and eight, ten, or twelve inches in length. Before inserting the seton, it should be dipped in oil of turpentine. The seton being now prepared, an assistant is to hold the animal, while the seton-needle, with the cord affixed to it, is plunged into the upper edge of the brisket or dewlap,* and brought out again towards its lower edge;

the space between the two openings should be from four to eight inches. The seton is to be secured by fastening a small piece of wood, or tying a large knot at either end of the cord. Matter will begin to run the second day, and, after that, the cord must be drawn backwards and forwards two or three times every day, to irritate the parts, and by this means increase the discharge.

When setoning is had recourse to in inflammatory complaints, the cord should be dipped in the following blistering ointment:

Blistering Ointment.

TAKE—Yellow basilicon, one ounce;
Cantharides, in powder, three drachms;
Spirit of turpentine, two fluid drachms.

This ointment will be found to act quicker in stimulating the parts to action, and in bringing on the suppurative process.

The root of the common dock will make a very good seton, and one that will act speedily and powerfully; but the best of all, where a considerable effect is intended to be produced, is the root of the black hellebore. This will generally cause considerable swelling as well as discharge.

CHAP. V.

CATARRH, EPIDEMIC COLD OR INFLUENZA, FELLON.

A SIMPLE cold attended by slight cough and discharge from the nostrils is properly termed *catarrh*. *Epidemic cold* or *influenza* prevails at some seasons of the year among a considerable proportion of the cattle of certain districts. *Fellon* is an ambiguous term, that ought to be discarded, and that has principal reference to inflammatory complaints of every kind. It probably originated from those external swellings, or the crackling under the skin, which usually accompany inflammatory complaints in cattle.

A simple cold is easily removed. Warm housing, a few mashes, and the following drink, will usually succeed:

RECIPE (No. 1.)

Cough and Fever Drink.

TAKE—Emetic tartar, one dram;
Powdered digitalis, half a dram; and
Nitre, three drams:
Mix, and give in a quart of tolerably thick gruel.

The symptoms of epidemic cold or catarrh are more serious; the beast is dull and heavy, with weeping at the eyes, and dry muzzle. The hair looks pen-feathered, or staring; the appetite fails, and the secretion of milk is diminished: there is considerable heaving of the flanks; the pulse is from 60 to 70, and the bowels are generally costive or *sapped.*

Sudden and considerable changes of the weather, and particularly in the spring and fall of the year, are the usual precursors of this complaint. When easterly winds prevail at the spring of the year great numbers of cattle are often seized with the influenza. Cattle that have been tenderly managed during the winter, and cows after calving, are very subject to it, especially if they have been poorly fed, or driven long distances, and exposed to a cold piercing wind.

It will be necessary to commence the treatment of this disease with bleeding. From four to six quarts of blood may be taken, and then a dose of physic given. The following will be a good purgative medicine in such a case:

RECIPE (No. 2.)

Purging Drink.

TAKE—Epsom salts, one pound;
Powdered carraway seeds, half an ounce:
Dissolve in a quart of warm gruel, and give.

After that the drink No. 1 may be given morning and night, the drink No. 2 being repeated if the bowels should be costive.

It will be proper to house the beast, and especially at night; and a mash of scalded bran with a few oats in it, if there is no fever, should be allowed. It is necessary carefully to watch the sick animals, and if the heaving should continue, or the muzzle again become or continue dry, and the breath hot, more blood should be taken away, and the purging drink repeated. At the close of epidemic catarrh the animal will sometimes be left weak and with little appetite. It must first be ascertained that the fever has quite left the beast, because listlessness and disinclination to move, and loss of appetite, and slight staggering, may result as much from the continuance of fever as from the debility which it leaves behind. If the muzzle is cool and moist, and the mouth not hot, and the pulse sunk to nearly its natural standard, or rather below it, and weak and low, the following tonic drink may be ventured on, but No. 1 must be returned to if there is the slightest return or increase of cold or fever.

RECIPE (No. 3.)

TAKE—Emetic tartar, half a dram;
Nitre, two drams;
Powdered gentian root, two drams;
Powdered chamomile flowers, one dram; and
Powdered ginger, half a dram.

Pour upon them a pint of boiling ale, and give it when nearly cold.

When the beast begins to recover, he should not be exposed in any bleak situation, or to much rough weather.

CHAP. VI.

RHEUMATISM, OR JOINT FELLON.

The early symptoms of this complaint are those of common catarrh, with no great cough, but more than usual fever, but by degrees the animal shows some stiffness in moving; and if the hand is pressed upon the chine or any part of the back, he will shrink as if it gave him pain. When the complaint goes no farther than this it is called *chine-fellon* in many parts of the country; but in two or three days the animal appears stiffer in the joints; afterwards they begin to swell, and are painful, particularly when he attempts to move. Sometimes the stiffness extends all over the body, to such a degree that the beast is unable to rise without assistance.

This is generally termed *joint-fellon*. Old cows are very subject to it, and especially a short time before calving; but generally milch cows and young cattle are attacked by it at the spring of the year. It is mostly occasioned by the animal being kept in a state of poverty during the winter, and suddenly exposed in the spring to the vicissitudes of the weather, or the inclemency of the north or north-easterly winds, especially in low situations.

As soon as this disease makes its appearance, the cow must be taken to a warm cow-house or stable, or some situation sheltered from the severity of the weather. The following purging drink should then be given:

RECIPE (No. 4.)

Sulphur Purging Drink.

TAKE—Sulphur, eight ounces;
Ginger, half an ounce.

Mix with a quart of warm gruel. This drink should be repeated every third day if the bowels should appear to require it.

The bowels having been gently opened, a drink which may cause some determination to the skin, and increase the insensible perspiration, should be administered.

RECIPE (No. 5.)

Rheumatic Drink.

TAKE—Antimonial powder, two drams;
Compound Ipecacuanha powder (Dover's powder), half a dram;
Aniseed powder, an ounce:

Mix with a pint of very thick gruel, and repeat the dose morning and night, except when it is necessary to give the sulphur purging drink (No. 4.)

If there should be much fever at any period of the complaint, the sulphur drink must be exchanged for the purging drink (No. 2, p. 55), and three or four quarts of blood may be taken away.

If any of the joints should continue swelled and painful, they should be rubbed twice a day, and for a quarter of an hour each time, with a gently stimulating embrocation.

RECIPE (No. 6.)

Rheumatic Embrocation.

TAKE—Neat's-foot oil, four ounces; and
Camphorated oil, spirit of turpentine, and laudanum, each one ounce;
Oil of origanum, one dram.—Mix.

If a scaly eruption should break out on the joints, or any part of the legs, after the beast has apparently recovered, an ointment thus composed will generally clear off the scurf, heal the cracks or sores, and cause the hair to grow again.

RECIPE (No. 7.)

Healing Cleansing Ointment.

TAKE—Lard, two pounds;
Resin, half a pound:

Melt them together, and when nearly cold, stir in calamine, very finely powdered, half a pound.

If stiffness or swelling of the joints should remain after the inflammation and tenderness are removed, the joints should be well rubbed morning and night with a gently stimulating embrocation. The following will be as good as any:

RECIPE (No. 8.)

Camphorated Oil.

TAKE—Camphor two ounces, and break it in small pieces; put it into a pint of spermaceti or common olive oil, and let the bottle, being closely stopped, and shaken every day, stand in a warm place until the camphor is dissolved.

When a beast has had one attack of rheumatism, he will be always subject to its return, and therefore should be taken more than usual care of in cold variable weather; and should he appear to have a slight catarrh, or to walk a little stiffer than usual, he should be housed for a night or two, and should have a warm mash, and the following cordial rheumatic drink; which, however, would be very improper in common hoose or cold, or in rheumatism, connected with any degree of fever.

RECIPE (No. 9.)

Cordial Rheumatic Drink.

TAKE—Rhododendron leaves, four drams; and boil in a quart of water until it is diminished to a pint; strain the decoction, and to half of the liquid, warm, add

Gum guiacum, finely powdered, two drams;
Powdered carraway seeds, two drams; and
Powdered aniseed, two drams, mixed with half a pint of warm ale.

CHAP. VII.

INFLAMMATION OF THE LUNGS.

WHEN common catarrh has been neglected, it will sometimes run on to inflammation of the lungs, or the beast may be attacked with the disease without any of the previous symptoms of catarrh. This is a very serious complaint, and requires the promptest and most decisive treatment.

The symptoms are dulness, shivering, cough that is particularly sore; the ears, roots of the horns, and legs are cold, but the breath and mouth are hot; the mouth is generally open, and there is a ropy discharge from it; the beast will seldom lie down, and can scarcely be induced to move; the flanks heave very laboriously, and the head is protruded, showing the great difficulty of breathing. The pulse is not always much increased in number, but is oppressed, and can sometimes scarcely be felt.

Inflammation of the lungs is caused by the perspiration being obstructed from sudden and great changes of the weather, especially when accompanied with wet. Cattle that are driven long distances and then exposed to the cold and damp air all the night, are particularly liable to it. In most cases it can be traced to the cattle being imprudently exposed to cold, but when the cause is not so apparent, it oftenest attacks those that are in good condition.

Copious bleeding is the remedy most to be depended on for subduing the inflammation, and should be had recourse to as soon as the disease is discovered. The beast must be put into a cool cow-house well littered, and immediately bled. If the difficulty of breathing and other symptoms are not much relieved in six or eight hours after the first bleeding, it should be repeated. A third or fourth bleeding may in bad cases be requisite. In this disease, more than in any other, the person who attends the cattle should be present when the beast is bled. It is impossible by looking at a beast, and considering the symptoms, to say what quantity of blood ought to be taken away; but as a general rule, and especially in inflammation of the lungs, and at the first bleeding, the blood should flow until the pulse begins to falter, and the animal seems inclined to faint. The faltering of the pulse will regulate the quantity of the after bleedings. Little bleedings of two or three quarts, at the commencement of inflammation of the lungs, can never be of service; from six to eight quarts must be taken, or even more, regulated by the circumstances that have been mentioned, and the blood should flow in a full large stream.

A seton should be set in the dewlap immediately after the first bleeding, and the purging drink (No. 2, p. 55) given.

Warm water and mashes must be regularly given two or three times a day.

When the beast has recovered, it will be proper, as much as possible, to avoid all those causes which induced the complaint. The animal should for a short time be housed during the night, and if the weather is very unsettled, kept up altogether, or turned out for a few hours only in the middle of the day

CHAP. VIII.

INFLAMMATION OF THE LIVER.

THIS is a disease to which cattle are oftener subject than is imagined, and particularly those that are in high condition and stall-fed; the symptoms, however, are indistinct, and will not always guide the observer during the life of the animal. As inflammation of the liver is rarely unaccompanied by considerable fever, the usual symptoms of fever will be present; as cold shiverings alternating with increased heat, laborious breathing, quick and hard pulse, loss of appetite, and constipation. To these will generally be added the distinguishing symptoms of pain on pressure on the edge of the short ribs on the right side, and yellowness of the eyes, mouth, and skin; but these are not in every case distinctly apparent. When, however, there is yellowness of the skin, with considerable fever, we can have no doubt which is the part principally affected; and especially when the yellowness does not begin to appear until the fever has been established two or three days. It will not, perhaps, be a matter of much consequence, if the case is mistaken in the early stage. The measures which would be pursued to abate the fever, viz. bleeding and purging, are precisely those to which we should have recourse in the beginning of inflammation of the liver.

A high degree of fever will always indicate that the bleeding should be prompt and copious. Not less than four quarts should be taken from the smallest beast; a large one, and in good condition, will bear the loss of seven or eight quarts: and, as in inflammation of the lungs, the bleeding should be speedily repeated if the symptoms are not abated.

No better aperient can be given than No. 2, p. 55, with the addition of two drams of powdered aloes, and this should be repeated in half-doses, four or five times, with intervals of six hours, if the bowels are not well opened. After the physic begins to operate, it should be repeated in sufficient doses, and with sufficient frequency, to keep up a gentle purging until the disease is completely subdued.

After the yellowness begins to appear, a scruple of calomel may be given with the salts, morning and night.

Inflammation of the liver frequently leaves after it a great deal of weakness, and tonics are clearly indicated. The best medicine that can be given is the following:

RECIPE (No. 10.)

Tonic Drink.

TAKE—Gentian root, powdered, half an ounce;
Ginger, powdered, one dram;
Epsom salts, two ounces:

Mix the whole with a pint of warm gruel, and give it morning and night.

No hay, and little corn, should be given in inflammation of the liver; but the diet should consist of mashes and green meat.

When the beast dies of inflammation of the liver, all the contents of the chest and the belly will be found to be considerably affected. The lungs in almost every case exhibit much inflammation, and there are patches of inflammation in the bowels.

It has been stated that fat beasts, or such as are in good condition, are very liable to this disease, and particularly those that have been fed much on oil-cake. It is more frequent in hot than in cold weather, and in fat beasts that have been over-driven, or worried in woodland pastures by the flies. Sudden change of weather, the exposure of a well-fed beast that had been well-housed to considerable cold, or indeed any thing that has a tendency to excite fever, will produce inflammation in an organ that has been over-worked, or disposed to disease from the undue secretion of bile in the rapid accumulation of flesh and fat.

CHAP. IX.

THE YELLOWS, OR JAUNDICE.

This is a far more common disease than the last, and more dangerous, because, although it is not marked by any acute symptoms, or accompanied by much fever, it creeps on insidiously, and fastens itself on the constitution, beyond the power of medicine to eradicate; or it is the consequence and the proof of some disease of the liver, which is equally difficult of cure. It may be the consequence of inflammation of the liver, or of too great secretion of the bile, or stoppage of the vessel by means of which the bile would flow away into the bowels. If its passage be obstructed, it flows back again into the liver, and there is taken up by the absorbents, and carried into the circulation, and communicates a yellow colour to the blood; and as the blood, by means of the capillary vessels, is carried to every point and part of the body, so the yellow hue of the disease spreads over the whole of the frame.

This obstruction is sometimes effected by the undue thickness of the bile; sometimes by bile or gall-stones, which obstruct the passage, and in not a few cases it is caused by a greater secretion of bile than can be thrown into the intestines, and which is thus accumulated in the liver, and taken up by the absorbents, and carried into the frame in the manner that has been just described.

There is even at the beginning of the disease considerable dulness and languor, and loss of appetite. The cow wanders about by herself, or is seen standing by the side of the hedge or the fence in a most dejected manner. The milk is generally lessened; the bowels are costive; and the foreteeth are sometimes loose: milch cows are even more subject to it than oxen, and particularly in the latter end of the year. Sudden change of weather frequently gives rise to it, and especially if the animal has previously exhibited symptoms of ill-health.

The treatment and the hope of cure depend upon the causes and degree of the disease, which should be most carefully ascertained. If it has followed symptoms of fever, probably indicative of inflammation of the liver, it may be difficult to remove, because it may develope the ravages which disease has made in the organ. Should any fever accompany its early appearance, it should be reduced by bleeding. The bowels should then be freely opened by means of the purging drink (No. 2, p. 55), and kept open by half doses of it administered as occasion may require. In this disease, oftener than in any other to which cattle are subject, stomachics are useful to rouse the digestive organs to their proper tone and power. Mingled with them, or at other periods of the day, medicines may be given which are supposed to have a direct effect on the liver, and a tendency to restore its healthy action; therefore, while the *tonic drink* (No. 10, p. 64) is giving in the morning, the following may be given at night:—

RECIPE (No. 11.)

Drink for the Yellows.

TAKE—Of calomel and opium, ten grains each:
Mix and suspend in a little thick gruel.

After the yellowness is removed, and the beast restored to health, the *tonic drink* should be given twice in the week for a month. It will contribute to restore the weakened appetite, and particularly will bring back to the milch cow the proper flush of milk.

CHAP. X.

INFLAMMATION OF THE BRAIN.

THIS is not a very frequent, but a most frightful disease. It is commonly known by the names phrenzy or sough. It is most prevalent among well fed cattle, and particularly in the summer months. In the early period of it the beast is dull and stupid. He stands with his head protruded, or pressed against something for support. He refuses to eat, ceases to ruminate, and is, in a manner, unconscious of surrounding objects. Now and then he will stand motionless for a long time, and then suddenly drop; he will start up immediately, gaze around him with an expression of wildness and fear, and then sink again into his former lethargy. All at once, however, his eyes will become red, and seemingly starting from their sockets; the countenance will be both anxious and wild; the animal will stagger about, falling and rising again, and running unconsciously against every thing in his way; at other times he will be conscious enough of things around him, but possessed with the irrepressible desire to do mischief. He will stamp with his feet, tear up the ground with his horns, run at every one within his reach, and with tenfold fury at any red object, bellowing all the while most tremendously, and this he will continue until nature is quite exhausted; a sudden and violent trembling will then come over him, he will grind his teeth, and the saliva will pour from his mouth, he will fall, every limb will be convulsed, and he will presently die.

Causes.—It proceeds most commonly from a redundancy of blood in the system, called by farmers an overflowing of the blood; and this is induced by cattle thriving too fast when turned on rich pasture grounds, or their being fed too quickly to get them into condition for show or sale. It is sometimes occasioned by the intense heat of the sun, when cattle have been turned into the fields where there has been nothing to shade them from its influence. It may be induced by severe contusions on the head, or by the cattle being harassed and frightened, when driven along the road, or through large towns.

Very few weeks pass in the metropolis in which cattle are not driven into a state of absolute madness, either by the brutality of the drover, or by a set of miscreants whose sport it is to hurt and infuriate the animal, and endanger the lives of the passengers.

The chief or the only cure is bleeding. The neck vein should be opened on each side if possible, and the blood should be suffered to flow until the animal drops. It is absurd to talk of quantities here; as much must be taken as will flow, or, at least, until the violence of the symptoms is quite abated.

To this will follow physic. The following may be administered:

RECIPE (No. 12.)

A strong Physic Drink.

TAKE—Epsom or Glauber's salts, half a pound;
The kernel of the croton nut, 10 grains;

Take off the shell of the croton nut, and weigh the proper quantity of the kernel. Rub it down to a fine powder; gradually mix it with half a pint of thick gruel, and give it, and immediately afterwards give the salts, dissolved in a pint and a half of thinner gruel.

If the violence or even the wandering should remain, another bleeding should take place six hours afterwards, and again until the animal faints, and the purging should be kept up by half doses of the No. 2 powder, p. 55.

Although the violence of the disease, and of its remedies, will necessarily leave the beast exceedingly reduced, no stimulating medicine or food must on any account be administered. Mashes and green food, and these in no great quantities, must suffice for nourishment, or if the animal, as is sometimes the case, is unable to eat, a few quarts of tolerably thick gruel may be horned down every day; but ale and gin and spices, and tonic medicines, must be avoided as downright poisons. There is not a more common or a more fatal error in cattle management, than the eagerness to pour in comfortable, I would rather say, poisonous drinks. Even the treacle and the sugar in the gruel must be prohibited, from their tendency to become acid in the debilitated stomachs of the animal recovering from such a complaint.

Every symptom of the disease having vanished, the beast may *very slowly* return to his usual food; but when he is turned out to pasture it will be prudent to give him a very short bite of grass, and little or no dry food. Nature is the best restorer of health and strength in these cases, and it is often surprising, not only how rapidly the ox will regain all he has lost, if left to nature, and not foolishly forced on, but how soon and to what a considerable degree his condition will improve beyond the state in which he was before the complaint.

The ox that has once had inflammation of the brain, should ever afterwards be watched, and should be bled and physicked if there should be the least appearance of staggers or fever. The safest way will be to send him to the butcher as soon as he is in sufficient condition.

Sometimes the disease does not run its full course. There is but a slight degree of inflammation, or it may be sudden determination or flow of blood to the head from some occasional cause, and without inflammation. This is known by the name of

STAGGERS, OR SWIMMING IN THE HEAD.

The symptoms are heaviness and dulness, a constant disposition to sleep, which is manifested by the beast resting its head upon any convenient place; and he reels or staggers when he attempts to walk. If this disease be not checked by bleeding, purging, and proper management, it will probably terminate in inflammation of the brain, or inflammatory fever.

It mostly attacks those cattle that have been kept in a state of poverty and starvation during the winter season; and which have in the spring of the year been admitted into a fertile pasture: hence is produced a redundancy of blood in the system, which on the slightest disturbance, or even naturally, gives rise to the disease.

The cure must be attempted by taking from four to six quarts of blood from the animal, according to its size and strength; the purging drink (No. 12, p. 70) must then be administered, and No. 2, p. 55, continued in half-doses every eight hours, until the full purgative effect is produced. If the animal is not relieved in the course of two hours from the first bleeding, the operation must be repeated to the same extent, unless the beast should become faint; and the bowels must be kept in a loose or rather purging state by No. 2. As soon as the bowels are opened, the fever powder (No. 1) should be given morning, noon, and night, until the patient is well. Nothing more than a very little mash should be allowed, and all cordials should be avoided as absolutely destructive to the beast.

Although it is a difficult thing to produce a blister on the thick skin of the ox, it should be attempted if the disease does not speedily subside. The hair should be closely cut or shaved from the upper part of the forehead and the poll, and for six inches on each side down the neck, and some of the following ointment well rubbed in:—

RECIPE (No. 13.)

Blister Ointment.

TAKE—Lard, twelve ounces;
Resin, four ounces;
Mix them together, and when they are getting cold add
Oil of turpentine, four ounces; and
Powdered cantharides, five ounces;
Stirring the whole well together.

A seton in the dewlap, made with the root of the black hellebore, will also be advisable.

When the blister is beginning to peel off green elder, or marsh mallow ointment, will the best application to supple and heal the part. A little may be gently smeared over the blistered surface morning and night.

When the animal appears to be doing well, he must very slowly be permitted to return to his usual food. He should for some weeks be put into short and scanty pasture; the seton should be continued in the dewlap, and occasional doses of Epsom salts administered.

CHAP. XI.

INFLAMMATION OF THE BOWELS, WITH COSTIVENESS.

INFLAMMATION of the bowels is by no means an uncommon disease amongst neat cattle, and frequently proves fatal to them from injudicious treatment. It is a complaint easily known by the fever, pain, and costiveness attending it.

The animal appears remarkably weak and low; lies down frequently, and rises again with much difficulty, and sometimes strikes at his belly with the hind feet. The bowels are confined, and the urine generally voided with difficulty. The pulse is quicker than natural, and the beast breathes rather quickly, which is perceived by the heaving of the flanks.

The disease mostly arises from cattle catching severe colds; and especially by their going into rivers or ponds, after being heated and fatigued. It is sometimes produced by change of pasture, and feeding too much on dry and stimulating diet.

The first thing to be attempted, and that which admits of no delay, is to open the bowels, and, preparatory to that, and very materially securing the effect of the medicine, the beast should be bled; from four to six quarts at least should be taken. Immediately afterwards the purging drink (No. 12 p. 70) should be administered, and its effect promoted by half doses of No. 2, as a milder purgative, given every six hours. This *being sapped* is a very dangerous disease, and the measures pursued must be of the most decisive kinds. The third stomach or manyplus will generally be found, after death, choked up with dry food, hardened between the plates of which that stomach is composed. It will be necessary to wash this well out before the proper path to the fourth stomach will be opened. In order to effect this plenty of thin gruel, or water with the chill taken off, should be given, and if the beast will not drink it, several quarts of it should be horned down. Clysters of warm water, or thin gruel, with a purging powder dissolved in them, should likewise be administered.

Generally speaking, all that will be necessary in this complaint is to remove the costiveness, and no means must be left untried to effect this. If it should not be accomplished after the third dose of the Epsom salts, a pound of common salt may be given. This will induce the beast to drink, as well as assist in purging him. Should not even this produce purging, a pound and a half of castor oil may be given.

The costiveness is sometimes exceedingly obstinate, and the patience of the attendants may be almost worn out in vain attempts to overcome it. They must, however, persist. The Epsom salts and the castor oil will not do harm in whatever quantities they are given; it will not be prudent, however, to repeat the common salt, but an ounce of powdered aloes may be given in its stead. If the costiveness is still obstinate, and the animal pants much, and the pulse quickens and becomes small and hard, and the eyes are red, and the ears and legs are cold, and the beast is in a profuse sweat, and gives evident signs of suffering considerable pain, the bleeding must be repeated in the same quantity; a seton inserted in the dewlap; the belly sponged with water as hot as the hand can bear, and clysters of Epsom salts dissolved in warm water, thrown frequently up. Here, again, no cordial must on any account be administered.

The attendant must not be deceived by the passage of a little liquid dung in a small stream, for that shows that there is yet much hardened fœces yet to be removed clinging round the intestines, and therefore he must pursue the measures recommended until the dung is expelled in considerable quantities, and in a large full stream, and without much straining. There has generally been something wrong in the food or management when this sad constipation is observed. Either the animal has been kept too much and too long on dry food, or he has been turned into fresh pasture (and particularly in the autumn) in which there are oak trees, or some astringent vegetables. This must be altered, or the disease will return.

This constipation usually attends all fevers to a considerable degree, and often precedes red-water. For the treatment of this complaint the reader is referred to Chapter XIII. The state of the bowels of a beast that has once been sapped should be observed for some time afterwards, and gentle aperients occasionally administered; cold water should not, for a little while, be permitted, and strict attention should be paid to the diet.

Inflammation of the bowels, however, will sometimes occur without costiveness, and nearly from the same causes. The symptoms are nearly the same, but the danger is not so great. The beast should be bled and physicked, kept moderately warm, and have warm water with bran mashes

CHAP. XII.

DYSENTERY, SLIMY FLUX, OR SCOURING ROT.

THIS disease is met with at every season of the year, but is most prevalent in autumn, particularly in low, wet, and swampy situations. It is one of the most fatal diseases to which oxen, and dairy cows in particular, are subject, and destroys more than any other malady.

It begins with frequent and painful efforts to expel the dung, which is thin, slimy, stinking, and olive-coloured. The animal, as appears from his restless state, suffers much pain, frequently lying down and soon rising again. There is also a frequent rumbling noise in the intestines. If the disease is neglected, or improperly treated, the beast gradually gets thin, although for a while he retains his appetite, and continues to ruminate; he however, soon begins to get weak, the rumination is imperfectly performed, and the food passes from him half digested. As this is often an affection of the liver, considerable tenderness will be discovered on the spine a little beyond the shoulders. This is one of the methods, and a very good one, by which the farmer endeavours to ascertain whether a beast he is thinking of purchasing has the scouring rot. As the disease proceeds the dewlap hangs down and has a flabby appearance; the dung runs off with a putrid and offensive smell, and, as it falls upon the ground, rises up in bubbles, and often a membranous or skinny-like substance is seen upon it; this is occasioned by the natural mucus, which was given to defend the bowels, being discharged. In proportion to the quantity of mucus that mingles with the fœces, the whole is rendered more adhesive, and the bubbles are larger, and remain longer on the dung. When this is the case the disease is always obstinate, and generally fatal. The hair all over the body soon appears pen-feathered or staring. Feverish symptoms also accompany the complaint; the eyes appear dull and inflamed, there is much working of the flanks, and the pulse is quick.

The causes of this dreadful malady are, taking cold at the time of calving, long journeys, exposure to sudden vicissitudes of the weather, and, after being overheated in travelling, being turned into damp pastures, &c. Poor keep is a very frequent cause, and especially when connected with exhaustion from constant milking, and especially it results often from the cows being badly kept in the winter. Some cold wet lands are particularly liable to give the rot; yet where the land and treatment are similar it sometimes prevails more in some dairies than in others. Old cows that are fed on sanded pastures are very subject to this complaint.

If the purging is the consequence of the cattle being taken from hard work and poor keep, and turned into luxurious grass, and especially in spring of the year, the looseness may be considered as a kind of salutary process to carry off this great increase of nutriment, which could not otherwise be disposed of, and it will very soon be stopped by change to shorter pasture, or, perhaps, to some kind of dry food. Hay and mashes, with water given a little at a time, and frequently, will be all that will be required. When, however, the purging is produced by unwholesome food, or by the cattle being turned into meadows that have been flooded, and it is accompanied by great loss of condition, staring coat, yellow skin, and variable and impaired appetite, very few that have been attacked by this disease will recover.

In all cases the animals should be taken from grass, and put into a large cow-house, or an open yard, where they can be sheltered from the weather, and kept on dry food, such as good hay, ground oats, barley, and beans. Take an equal quantity of each of these three last articles, and add to them a similar quantity of linseed cake; this will make good food for cattle labouring under dysentery. A proper quantity should be given them two or three times a day, or if they are much reduced and their appetite is quite gone, a stiff gruel may be made of the same, and horned down three or four times a day.

If the eyes are inflamed, with heaving of the flanks, and painful twitchings of the belly, accompanied by severe straining and apparent gripings in the expulsion of the excrement, bleeding should be immediately resorted to; three or four quarts of blood may be taken from the beast.

The purgative drink (No. 2, p. 55) should precede the use of every other medicine, in whatever state the bowels may be. It will prepare for the safer use of astringents. In almost every case there will be something in the bowels, which, if it did not cause the disease, contributes to keep it up. The proprietor of cattle, and he who professes to treat their diseases, should know that there can be nothing more dangerous than to attempt suddenly to stop a violent purging, and that, in the majority of cases, it would be fatal. Let that which offends in the bowels be first got rid of, and the disease will sometimes cease of itself, or if it does not, astringents may be administered with safety.

The safest, and the most effectual drink for the scouring rot is the following, which may be given once or twice in the day, according to the violence of the complaint:—

RECIPE (No. 14.)

Astringent Drink.

TAKE—Prepared chalk, two ounces;
Oak bark, powdered, one ounce;
Catechu, powdered, half an ounce;
Opium, powdered, two scruples;
Ginger, powdered, two drams:
Mix, and give in a quart of warm gruel.

Ale should never be given in these cases. The astringents may be commenced twenty-four hours after the purgative has been administered.

If the disease does not speedily yield to this treatment, it will not be prudent to continue the use of such large quantities of astringent medicines for any considerable time. The following drink may then be given, and continued morning and night for five or six days:—

RECIPE (No. 15.)

Astringent Drink with Mutton Suet.

TAKE—Mutton suet, one pound;
New milk, two quarts: boil them together until the suet is dissolved; then add
Opium, powdered, half a dram;
Ginger, one dram, having been previously well mixed with a spoonful or two of the fluid.

When the dysentery is stopped, the beast should very slowly and cautiously be permitted to return to its former green food. Either during the night, or the day, according to the season of the year, he should be confined in the cow-house, and turned out only during twelve out of the twenty-four hours. Water should be within its reach in the cow-house, and, if possible, in the field; for there are few things more likely to bring on this disease, or more certain to aggravate it than the drinking of an inordinate quantity of water after continued thirst.

These precautionary measures should be continued for a considerable time, for there is something very treacherous in this malady, and it will often suddenly return several weeks after it has been apparently subdued.

In those cases, and they are much too numerous, which totally resist the influence of the medicines already recommended, other means should be tried. The alum whey has sometimes succeeded, and is thus prepared:—

RECIPE (No. 16.)

Alum Whey.

TAKE—Alum, half an ounce;
Milk two quarts: boil them together for ten minutes, and strain.

This may be administered twice every day.

The disease may not yield even to this. It will then be evident that it is the consequence of some other disease, and, probably, of the liver, the vitiated bile secreted by which may keep up the purging. It is almost a forlorn hope to attack this; but the beast may be valuable, and, at all events, we cannot be worse off. The only medicine that can have power here is mercury, for it seems to exert its chief influence on the liver and the discharge of bile. The mildest, and at the same time the most effectual, form in which it can be administered, is that of the blue pill, half a scruple of which may be given morning and night, rubbed down with a little thick gruel. There is not much danger of salivation ; it will, however, be prudent to give half a pound of Epsom salts every fifth or sixth day, and most certainly to give them every second day; discontinuing the blue pill, if the mouth should become sore, or the breath stinking, or there should be a discharge of saliva from the mouth.

In the last edition of this work a distinction was drawn between dysentery and diarrhœa, a distinction, however, not always to be depended upon, although drawn by a very careful observer. The principal difference would be, that in diarrhœa, the dung is voided in larger quantities ; it comes in a full stream ; and although it may sometimes be strong, and even bloody and offensive, it is never to the extent that we see in dysentery ; nor is it often attended with the straining in the evacuation by which dysentery is characterised. The bubbles do not rise, or remain so long upon the blood, and it is much more easy of cure. It occurs at all times of the year, and particularly if there is a sudden and great change of pasture, whereas dysentery is most prevalent in the spring or autumn. Diarrhœa is often, however, the precursor of dysentery in its worst form.

Diarrhœa is very apt to occur in cold changeable weather. If a north or north-easterly wind suddenly blows in the spring of the year, a considerable proportion of the dairy cows will begin to purge, especially if they are in an exposed situation, and have been badly kept.

Cows after calving are liable to take cold when exposed in damp and wet situations in rainy weather, and severe purging almost always accompanies the cold.

The treatment is the same as for dysentery. A mild purgative should be administered, and, after that, the chalk and astringents already recommended, and the animal brought into a cow-house or open yard, where it can be sheltered from the weather, and kept partly or entirely on dry meat.

The same caution will be necessary as to the after treatment. Except, however, the purging is very considerable, and the cow begins to refuse to eat or to ruminate, and is becoming feverish, and is rapidly losing flesh, it may be better to see for a few days what removal to a sheltered situation and change of food will do, and to refrain from giving medicine.

CHAP. XIII.

INFLAMMATION OF THE KIDNEYS, OR RED-WATER.

If this disease can be observed at the beginning, it will be found to be always accompanied by fever; but from the too frequent habit both in the cowherd and the master to pay little or no attention to the diseases of cattle, until they are confirmed and dangerous, this malady is seldom recognised before the urine is decidedly red or *bloody*.

The kidney appears to be a very weak part in cattle, almost as much so as the bowels. It is apt to take on inflammation, and, when it is inflamed, it seems very soon to receive serious injury. In inflammation, a greater quantity of blood than usual is determined to the inflamed part. When the inflammation reaches a certain point, the distended vessels give way, and blood is poured out, and mingles with the urine, and gives the character and name to the disease.

It begins with a shivering, succeeded by increased heat of the body; the muzzle dry; working of the flanks; urine of a red colour, discharged in small quantities, and sometimes with considerable pain; loss of appetite. As the disease proceeds, the animal loses strength; the bowels become constipated or very loose; the urine of a dark colour, approaching to black, and death soon closes the scene, but which might have been prevented by proper treatment.

Very early in the complaint the loins become exceedingly tender, and the animal shrinks when they are pressed upon; some heat is likewise felt, showing evidently the seat and nature of the disease. It sometimes proceeds from cold, particularly when beasts are turned into low pasture grounds at the spring of the year. It also frequently seizes young beasts that are feeding, or in good condition; for a fulness of blood in the system renders them more liable to the complaint.

Sometimes inflammation of the kidneys proceeds from external injuries; such as a violent bruise across the loins in consequence of other beasts ramping on them, or from a severe blow in the region of the kidneys.

The far more frequent causes result from the nature of the pasture. There are some farms, or particular parts of the farm, where red-water is almost sure to follow when cattle are turned upon them. Low marshy grounds are apt to produce it, and also pastures with much woodland, and especially in the latter part of autumn, when the leaves are falling. Some have said that elm-leaves are apt to cause red-water, others attribute the disease to the oak, and many more to some of the numerous species of ranunculuses that abound in our marshy and woodland pastures. The truth of the matter, however, is, that no one knows what plant is most concerned in the affair, and all that the farmer can do is to observe what pastures most frequently produce it, and at what season of the year, and to use them as much as he can for other stock in the dangerous seasons.

Cows that are dried of their milk are often attacked by it, when put into luxurious pasture, and when it does not affect those that are still milked. The reason of this is plain enough:—the superfluous nutriment not being carried off by the udder in the form of milk, the kidneys have more to do, and are unable to accomplish their increased labour without injury and rupture of their vessels.

Some breeds of cows are more disposed to red-water than others, and especially if they are brought from a distance, and the quality of their pasture materially changed, whether from good to bad, or from bad to good. A cow that has once had an attack of red-water is very liable to a repetition of the attack. The farmer is obliged to take a great deal of care properly to manage the change of pasture with her, and, notwithstanding all his care, she will probably have two or three attacks of the disease every year. It will behove him to consider how far it is prudent to keep such an animal. No beast that is subject to periodical complaints of any kind should be kept, for it may be easily prepared for the butcher, with little or no loss to the farmer.

Black-water is usually the consequence, or the last stage of red-water. The blood is poured out in so great quantities, that it coagulates or clots in the bladder, and so changes its colour, or sometimes changes its colour from its altered character, as it approaches to putridity. In some few cases, however, the black-water appears from the very beginning. The cause of this black appearance is not satisfactorily understood; but one thing is too well known, that it is more difficult to treat than red-water, and generally fatal.

The red and the black-water are diseases that require prompt and careful treatment; for, although in some cases the beast does not seem to be much affected by it, and works and yields her milk as well as ever, yet ere long it preys upon the constitution, and the animal gradually wastes away. This tendency to discharge blood from one part is likewise apt to spread to others, and the milk has frequently been discoloured.

It is folly to wait in order to see whether nature will effect a cure. Except in beasts suddenly put upon more than usually rich pasturage, it never is or can be a salutary discharge. It must be preying upon and wasting the constitution, and the sooner it is attacked or got rid of the better. As it attacks milch cows oftener than others, it is more injurious to them than to others. While it lasts, it generally materially lessens the quantity of milk, and, even after it is removed, the animal is slow in returning to her former strength.

The first thing to be done is to remove the cause of the disease. The pasture should be changed. A more open and drier situation should be found, and where the grass, although succulent and nutritious, is not very plentiful. If there is considerable fever, or the animal should appear to be really ill from the discharge, she should be taken under shelter, and fed on mashes, with a very little hay; or a few turnips or carrots may be allowed her if they are in season.

Bleeding is uniformly necessary at the onset of this disease; in proportion to the size, strength, and condition of the beast, from three, four, or six quarts of blood may be taken away. About two hours after bleeding, let the following drink be administered:—

RECIPE (No. 17.)

TAKE—Epsom, or glauber salts, one pound;
Cape aloes, in powder, half an ounce.

Pour one quart of boiling water upon the ingredients, and when new-milk warm give it.

This drink, without the aloes, may be repeated every second or third day, as the circumstances of the case may require. Should the feverish symptoms continue, it will be proper to repeat the bleeding, but in smaller quantity; two to three quarts will then be sufficient.

If the animal shrinks when the hand is rather forcibly pressed on the region of the kidneys, let the loins be fomented two or three times a day with hot water, for about fifteen or twenty minutes each time.

After the second dose of physic, and especially if the discharge is a little subsiding, it may be as well to wait a few days. With the removal of the inflammation, effected by the bleeding and physic, the discharge will often cease; but if it still continues, and in as great a quantity as before, it will be right to have recourse to astringents, yet such as will not irritate and stimulate the kidney. We must not add fuel to fire, or we shall be likely to aggravate instead of relieving the disease. The following prescription will be as efficacious as any:—

RECIPE (No. 18.)

TAKE—Oak bark, powdered, half an ounce;
Powdered catechu, two drams; and
Opium, powdered, half a scruple:
Mix together in a pint of gruel or warm water.

If the disease should not gradually yield to this, a different formula may be tried, combining some tonic medicine with the astringent.

RECIPE (No. 19.)

TAKE—Oak bark, powdered, half an ounce;
Gentian root, powdered, two drams;
Ginger, one dram; and
Opium, powdered, half a scruple:
Mix as before.

The first of these may be given morning and night, for a week, and then may give place to the second, which should also be administered twice daily.

The alum whey (No. 16, p. 83) may also be given at noon, if neither recipes 18 or 19 appear to be effectual.

After all this, should the disease continue, it will probably no longer proceed from inflammation of the part, but from weakness of the vessels; from their being so exhausted as not to be able to close upon their contents, and arrest the flow of blood; therefore we must look out for a stimulus, whose action is principally excited on the kidneys and urinary organs generally, and we find that in turpentine. Too many persons give it early in the disease; but a stimulant applied to a part actually inflamed, must increase that inflammation, and do mischief. When, however, the inflammation has passed, and only debility remains, a stimulant may rouse the part to healthy action, and the vessels which are pouring out blood may be enabled to contract and to close.

RECIPE (No. 20.)

TAKE—Spirit of turpentine, two ounces;
Laudanum, half an ounce:

Mix with a pint of gruel, or warm milk, and give once a day for three or four days.

It will then be prudent to rest for a while, even although the cure may not have been effected, for it is very easy to carry the stimulating plan too far, and bring back the original inflammation, and render the case desperate.

During the whole course of treatment, the bowels should be kept open. This demands particular attention, not only because costiveness is sometimes an early symptom of the disease, but an almost invariable companion of it. After the bowels have been well evacuated by Epsom salts at the commencement of the treatment, the sulphur drink (No. 4, p. 58) will be the best irritating aperient that can be used. In a few instances the discharge of bloody urine will cease, and blood will mingle with the dung, and that in a considerable quantity. The astringent drink (No. 14, p. 81) will be the best medicine that can be given in such case; but if, after three or four doses, the bloody flux continues, the following prescription may be tried:—

RECIPE (No. 21.)

TAKE—Prepared chalk, one ounce;
Rub it gradually down with
Syrup of buckthorn, two ounces;
Syrup of white poppies, two ounces; and
Castor oil, slowly mingled with the other ingredients, eight ounces.

Let this be given morning and night for a few days.

If much straining should accompany the expulsion of the fœces, indicated by the manner of the animal, and particularly by the extended horizontal position of the tail, half a dram of powdered opium may be added to the last recipe.

When the discharge of bloody urine has resisted all other means, the following medicine may be tried; but it must not be too often or incautiously administered:—

RECIPE (No. 22.)

TAKE—Sulphuric acid (oil of vitriol), one dram ;
Tincture of opium, half an ounce ;
Treacle, four ounces :

Mix ; give it in two quarts of warm gruel, and repeat it daily for a week, and then every second day, for a fortnight, unless the discharge should be earlier got rid of.

CHAP. XIV.

GARGET, OR THE DOWNFALL IN THE UDDER OF COWS.

THIS is a disease of the utmost consequence to the owners of neat cattle. Young cows in high condition are most liable to it, especially at the time of calving. Such as are aged are chiefly subject to it during hot and sultry weather, particularly those which are fattened for the shambles; when this is the case the loss is considerable, a summer's keep being generally thrown away.

This disorder makes its appearance in one or more quarters of the udder, which are swollen, indurated, hotter than common, and painful when pressed; if it is a milch-cow, the secretion of milk is lessened, and mingled with blood, pus, and corruption. At other times the flow of milk is totally stopped, and the tumefied quarter proceeds to a state of suppuration. It not unfrequently happens that the hind extremities, at the same time, become swollen and inflamed, especially about the hip joint, hock, and fetlock, which often disables the animal from rising when down.

It is an inflammation of one or more quarters of the udder, and is most commonly induced by the animal catching *cold*. It particularly attacks those cows that have a redundancy of blood in the system, or are said to be of a gross habit of body. Young heifers are not always exempt from it.

It will be necessary, as soon as the downfall is first discovered, if the animal is in the pasture, to fetch her out, and take from three to five quarts of blood, according to her size and strength. If she is bled at night, it will be proper the next morning to give her the purging drink (No. 2, p. 55), or if a stout beast No. 12, p. 70.

The cow should be sparingly fed for a day or two on mashes, with a little hay, and afterwards turned on rather short pasture. As it is a disease either confined to, or most violent and dangerous in cows that are in high condition, it will be highly necessary to keep her for a while on spare diet. The ground-oats, and barley, and clover-hay, and oil-cake, that are sometimes given, cannot fail of aggravating the complaint.

The following ointment may likewise be well rubbed into the affected quarter immediately after milking, but it must be carefully washed off again with warm water before the milk is drawn.

RECIPE (No. 23.)

Garget Ointment.

TAKE—Soft soap, one pound;
Mercurial ointment, two ounces;
Camphor, rubbed down with a little spirit of wine, one ounce:
Rub them well together.

This ointment will penetrate into the diseased part of the udder, and be of very great service.

During the continuance of the disease, the bowels must be kept open with half-doses of No. 2, p. 55. The fever drink (No. 1) will also be useful, or one more decidedly diuretic.

RECIPE (No. 24.)

Diuretic Drink.

TAKE—Powdered nitre, one ounce;
Powdered resin, two ounces;
Ginger, two drams:
Mix them together in a little treacle, and give them in warm gruel.

After the purulent and bloody discharge has ceased, and the teat seems to be free from inflammation, and nearly of its natural size, colour, and softness, it will be prudent to continue the ointment and this last drink for two or three weeks at the least.

Cases, however, will occur, either neglected at the beginning, or the beast being too fat, and very much disposed to inflammation, in which the teat and the whole quarter will long continue hard and swelled, and tender, and will get worse and worse.

The whole of the affected part must then be carefully examined, to ascertain whether there is matter within, and whether it is pointing, *i. e.*, whether there is a part a little more prominent and softer than the rest. If this is detected, it should be freely opened with a lancet or penknife, the matter suffered to flow out, and the wound dressed with Tincture of Aloes, or Friar's Balsam. Slight incisions with a lancet, where matter cannot be detected, will often be serviceable. The flow of blood should be encouraged by fomentations with warm water. The teats are sometimes cut off in obstinate cases of this kind; but that should, if possible, be avoided, for the quarter will be lost, and there will be a serious diminution in the quantity of milk as long as the cow lives. The teat may be cut deeply to let out the matter, and will heal again, and may be as useful as ever. There are cases, however, in which it may be necessary to remove not only the affected teat, but the whole of the quarter. A skilful man, and one rather more competent than a common cow-leach, should be employed for this purpose.

A frequent but unsuspected cause of this disease is the hasty and careless mode of milking which is often adopted. A considerable quantity of milk is left in the bag, particularly when a cow gives her milk slowly. This is not only a loss to the farmer, from so much less milk finding its way into the dairy room, but the quantity of milk regularly given by the cow diminishes. She often, indeed, becomes nearly dry, and the milk curdles in the teats, and produces swellings, and lays the foundation for *garget*.

The *Sore Teats* to which some cows are subject is a very different disease, and often a very troublesome one. It usually occurs a little while after they have calved. If it happens in the summer, the animals are so sadly tormented by the flies, that it is difficult to milk them, and the discharge from the cracks and wounds passes through the hand in the act of milking, and mingles with the milk, and renders it disgusting, if not unwholesome.

The following ointment will generally be found effectual:—

RECIPE (No. 25.)

Ointment for Sore Teats.

TAKE—Elder ointment, six ounces;
Bees' wax, two ounces:

Melt them together, and add an ounce each of sugar of lead and alum, in fine powder—stir them well together until cold.

A little of this should be rubbed on the teats morning and night after milking, and if the flies tease the animal much, a little aloes or assafœtida may be mixed with the ointment. The latter is the more effectual, but its smell is very unpleasant.

The teats are sometimes so sore that it is necessary to hobble the cow, in order to make her stand: but this is seldom effectual; for the legs of the cow get sore, and she kicks worse than ever. Kindness and patience are the best remedies. It is never of any use to beat or ill-use a cow for this fidgetiness at milking. She will either at the time do mischief in return, or she will at some other time take her revenge.

CHAP. XV.

TREATMENT OF THE COW, BEFORE AND DURING CALVING.

It is an old and a true saying, and the truth of it nowhere more evident than in the treatment of the milch-cow, that the prevention is better than the cure. The difficulty of calving, and the mortality afterwards, are to be in a great measure traced to the improper management of the cow. So far as the udder is concerned, however, there is a plan usually adopted, and a very necessary one—the cow is dried six or eight weeks before calving. There should be a certain period between the cessation of the old milk, and the springing the new milk for the coming calf. If the new milk comes too soon, as it would if the milking were prolonged, it would curdle in the teat, and fester, and be very likely to produce garget.

During the early period of gestation, the animal may, and should be, tolerably well fed, for she has to provide milk for the dairy and nourishment for the fœtus; yet even here there should be moderation and care: but when she is dried, her food should be considerably diminished. She should not be too fat or full of blood at the time of calving, for that is the frequent cause of slinking, difficult labour, garget, milk-fever, and death. There are few things in which the farmer errs more than in this. There may be an error in starving her before she calves, but it is a much more dangerous one to bring her into too high condition.

Some cows are apt to *slink* their calves, or to produce them dead before their time. This generally happens about the middle of their pregnancy. If about that time a cow is uneasy, feverish, off her food, or wandering about in search of something for which she seems to have *a longing*, or most greedily and ravenously devouring some particular kind of food, she should be bled and physicked (No. 2, p. 55). If she is not quieted, she should be bled and physicked again in the course of three or four days. She should be immediately removed from the other cows; for should she slink her calf among them, it is not improbable that some, or even all, of the others will do the same. This is not easily accounted for, but it is perfectly true. The cow that slinks her calf will often require a good deal of attention. She should always be physicked, and in most cases bled, and then the best thing to be done with her is to fatten her for the butcher; for she will probably do the same again, and teach others the habit.

When the ninth calendar month has expired, the cow should be diligently looked after. She should be brought as near to the house as can conveniently be done; she should lose three or four quarts of blood unless she is very poor; and she should most certainly be physicked. It will be better if she can be separated from the other cows, and, although it may not be prudent to house her entirely, there should be some shed or shelter to which she may go.

When it appears that labour is close at hand, she should be driven gently to the cow-house, and then it will be better at first to let her quite alone. She will do better by herself than if she is often disturbed by one and another looking in upon her and watching her. If, however, she is discovered in the act of calving in the homestead, she should be let alone, however exposed may be her situation. It would sometimes be dangerous to drive her even a hundred yards. The usual symptoms of the approach of calving are uneasiness, slight lifting of the tail, lying down and getting up, the evident labour throe, gentle at first, increasing in force, and the commencement of the protrusion of the membranes from her shape. The still earlier symptoms, and preceding the labour by a few days, are enlargement of the udder, and redness of the space between her shape and the udder, and seeming opening or loosening of the bones of the pelvis.

The labour having actually commenced, the cow should not be left. The membranes will more and more protrude, until they break and the fluid by which the calf was surrounded escapes. If her pains are strong, the cow should for a while be scarcely meddled with; but if an hour or more elapses, and no portion of the calf presents itself, the hand, well greased, should be introduced to ascertain the situation and position of the calf. The natural position is with the fore feet presenting, and the muzzle lying upon the fore-legs. If the fœtus be in this position, and advanced into the passage, some time longer should be allowed to see what nature will do, and the strength of the animal supported by some gruel being horned down, with which a pint of warm ale has been mixed. As soon, however, as the throes begin to weaken, and before that, if no progress be made, manual assistance must be rendered.

Here it will be recollected that there are two objects to be accomplished if possible,—the saving of the lives of both mother and young, and therefore the means at first employed should be gentle. The hand should be introduced, and the fore-legs of the calf laid hold of and drawn down; the efforts of the operator being employed at the moment of the throes of the mother. If the legs are brought forward a little way, care should be taken that the head is accompanying them. The hand will sometimes be sufficient for this purpose. If the head cannot be moved by the hand, a cord must be procured with a slip knot at the end, which is to be passed carefully into the passage, and the mouth of the young animal being opened, fastened round his lower jaw. The end of this must be given to an assistant, who should be instructed to pull gently, but firmly, at the moment of the throes, while the principal operator is endeavouring to draw on the feet.

Should not this succeed, it will appear that, either from the narrowness of the pelvis, or the size of the fœtus, there will be difficulty and danger in accomplishing its extraction. The operator must then begin to think less of the safety of the calf, and endeavour to secure that of the mother. Two other large cords or ropes must be procured, and one fastened round each leg. The service of two assistants will now be required. One should pull at the head, and the other the feet, while the operator ascertains the progress that is made: too much force, however, should not immediately be used, for the chance of saving the young one must not yet be given up. This not succeeding, greater power must be applied, until the assistants begin to use their full strength, pulling steadily, and with the pains of the cow, if they still continue.

In the natural position of the calf, the young one is almost uniformly extracted by these means, and its life is preserved; for both the mother and the young will suffer more force to be employed without serious injury to them than would by some be thought credible.

The fœtus is not, however, always presented naturally, and it is the duty of the operator to ascertain its exact position in the womb. This he will not find much difficulty in accomplishing.

The most usual false position is the presentation of the head, while the feet of the calf are bent and doubled down under his belly, and remain in the womb. A cord must be passed as before around the lower jaw, which is then to be pushed back into the womb. The operator now introduces his hand, and endeavours to feel the situation of the feet. He is generally able to find them out, and to fix a cord round each pastern as before, or at least about the knee, and he can usually bring them into the passage. The head is then brought forward again by the cord; and the three cords being afterwards pulled together, the fœtus is extracted. Should the fœtus have been long fixed in the passage, and be evidently much swelled, the calf is certainly dead: the head may then be opened to lessen its bulk, and the extraction accomplished as before.

When the feet present, and the head is doubled under the rim of the passage, the case is more difficult, and the calf is very rarely saved; indeed it may be reckoned to be dead if it has remained in this position for any considerable time. Cords are first to be placed round the feet; the hand must be afterwards passed into the womb, and the situation of the head exactly ascertained, and the cord passed round the lower jaw. The calf being then pushed farther back into the womb, the head may be with little difficulty brought into the passage, and the three ropes being pulled together, the delivery is effected.

The last false presentation I shall mention is that of the breech, the tail appearing at the mouth of the shape. The hand is passed into the uterus, and the cords fastened round each hock. The calf is then pushed as far back as possible into the womb, and the hocks one after the other brought into the passage, the ropes being shifted as soon as possible to the fetlock. With the exertion of considerable force, the calf can now be extracted, and often without serious injury.

By studying these cases the operator will be enabled to adapt his measures to every case of false presentation, and they are numerous. Great force must sometimes be used to effect the extraction of the calf. The united efforts of five or six men have been employed, and even a horse has sometimes been attached to the cords. The fœtus has been destroyed, but the mother has generally lived; in many cases, however, she has evidently fallen a victim to this unnecessary violence. If by the united force of two or three men the fœtus cannot be brought away, any ruder and more violent attempt must be always injurious, and often fatal. The safer way for the mother, yet that is attended with considerable danger, is to separate some of the limbs of the fœtus. All that will generally be requisite is to cut off one, or possibly both shoulders, when the head and trunk may, without much difficulty, be brought away. The knife must be one that can be concealed in the hand, and that is hooked at the end, and rounded and thick at the back.

From the violent efforts of the cow, or from unnecessary artificial violence, the uterus or *calf-bed* may protrude, and be absolutely inverted. The case is not desperate. The part must be cleaned from blood and dirt, supported by a sheet, and then, beginning at the very fundus or bottom of it, it may be gradually returned by the union of some little ingenuity and a great deal of patience. The animal should be copiously bled before this is attempted, in order to relax the passage, and the application of cold water for a considerable time may contract the womb itself, and render it more easy to be returned. A stitch or a couple of stitches should be passed through the lips of the shape, in order to prevent a repetition of the protrusion, and the following anodyne draught administered:

RECIPE (No. 26.)

Anodyne Drink.

TAKE—Powdered opium, half a dram;
Sweet spirit of nitre, two ounces.

Rub them together, adding the fluid by small quantities at a time, and give the mixture in a pint of warm gruel.

If the cow has calved unseen and unattended, she will, like every other quadruped, set diligently to work to devour the cleansing, and to lick the new born animal clean. This, however, is often carefully prevented where there is the opportunity to do it. The calf is taken immediately away, and the cleansing thrown on the dung-heap. We act contrary to nature in this. She would not have given to herbivorous animals this propensity to eat the placenta, had not some useful purpose been effected by it. Cleanliness was one object, the next was either to support the strength of the animal, or to have an aperient or salutary influence on her. The mother and the young will be happier if they are left to pursue the dictates of nature. Many a cow has fretted herself into fatal fever from the sudden loss of her little one, and many a calf has died from the neglect of that cleanliness which the mother could best effect.

A great deal has been said of the necessity of cleansing the cow after calving, or the removal or expulsion of the placenta. There is much error in this. The placenta comes away with the calf, and it is that discharge from the womb, continued during several days, and which is observed to a greater or less extent in all quadrupeds, that gives the notion of any thing being retained. Medicine, however, is necessary to prevent that access of fever to which the cow in high condition is liable, and that not in the form of a stimulating cordial, falsely imagining that the animal wants support after the fatigue and pain it has undergone, but in that of a purgative, to prevent an attack of fever to which the animal is so naturally exposed after parturition, and which is so often hastened and aggravated by our absurd management.

The mother requires little care after calving except that of protection from much severity of weather, and this especially if she had been much nursed before parturition. A warm mash may be given daily for a little while, but otherwise she may return to her previous and not too luxurious feed. The state of her udder, however, should be examined: if it is at all hard, she should be milked twice every day, and the calf should be put with her several times in the day at least, if not altogether. Perhaps she will not let it suck, especially if it is the first calf, on account of the soreness of her teats, and her being unaccustomed to the duties of nursing. She must then be watched at sucking time, and the bag, if it be very hard and kernelly, and sore, must be fomented with warm water, or even, if necessary, the garget ointment (No. 52, p. 96) must be rubbed into the part principally affected.

CHAP. XVI.

THE MILK FEVER.

This is a disease peculiar to cows in high condition at the time of calving; whether young or old, all are liable to be attacked with it Whenever it takes place, either at home or in the field, it is distressing to the animal, as well as troublesome to the owner; for the beast is seldom able to rise for several days. The puerperal or milk fever is most frequent during the hot weather of summer. The cows most liable to be attacked with this fever have large udders, that are full of milk for several days before calving, and often very much inflamed and swelled. It is a very dangerous disease when severe, and often proves fatal even under the most judicious treatment. The milk fever most commonly attacks the cow about the second or third day after calving. I have known it seize some a few hours after calving. It is first perceived by the animal refusing her food, looking dull and heavy; a cold shivering fit comes on; then follows protrusion of the eye, heaving of the flanks, restlessness, and every symptom of fever. In a few hours, or on the next day at the latest, she begins to stagger; is weak in the loins; palsy steals over the whole frame, and she falls unable to rise again. It is in this stage that the disease is often first observed; the previous symptoms are not taken notice of, and the beast is almost past cure, before the owner is aware of her illness.

From this seeming palsy of the hinder limbs, and sometimes of the whole frame, the disease is called *dropsy after calving*, and a most fatal one it is. It is inflammatory fever, which has very rapidly run its course, and terminates in this sudden and utter debility. Cows, and the females of all animals, are more than usually liable to inflammatory complaints after parturition, and when there are new determinations of the circulatory fluid; and this predisposition to fever is increased when the cow was in high condition at the time of calving, and was not prepared for parturition by bleeding or physic.

The treatment will depend on the stage at which the disease is first noticed. If it is recognised before the cow is down there can be no doubt that the first thing to be done is to bleed largely. The strong physic drink (No. 12, p. 70) must then be administered, and the bleeding repeated, and the physic drink (No. 2, p. 55) given eight hours afterwards, unless the animal is evidently relieved. She should be brought as soon as possible into a comfortable place, where she may lie sheltered from the weather if the disorder should proceed.

If she is down when first seen the case is materially altered, and some consideration is required.

She should be made as comfortable as can be. A good bed of straw should be got under her, and her fore quarters should be considerably raised, so that the dung and urine may flow away. The debility must be very great, and the cow exceedingly emaciated, the latter of which is seldom the case, to prohibit bleeding even in this stage of the disease. Four quarts at least should be taken away, but the bleeding should be repeated, if ever, with very great caution. The physic drink (No. 2, p. 58) should be administered, and repeated every eighth hour in a half dose, until the beast is freely purged. All depends on getting the bowels quickly and freely opened; and if this is not effected in the first twenty-four hours, repeated clysters must be thrown up, consisting of thin gruel, with half a purging powder dissolved in it. It does not unfrequently happen, that when the beast begins thoroughly to purge it gets up and walks about, although very weak.

Should no relief be obtained by the bleeding and physic, the bowels must nevertheless be kept open by half doses of the physic powder (No. 2, p. 58), given daily, or oftener, if necessary. In order to make her as comfortable as possible, she must be shifted from side to side twice in the day, all filth of every kind must be carefully removed, a warm cloth thrown over her, and warm gruel or linseed tea frequently offered to her with mashes, if she will eat them.

It will be a very bad symptom if she begins to swell, and there are frequent belchings of very fœtid gas. If the digestive powers are thus weakened there is but little hope. The following ball should then be given, still continuing the purgative medicine if necessary:

RECIPE (No. 27.)

Cordial Drink.

TAKE—Caraway powder, one ounce;
Gentian powdered, half an ounce;
Ginger powdered, half an ounce;
Essence of peppermint, 20 drops.

This, in the form of a ball, will probably find its way into the paunch. Half the quantity of the above ingredients should also be given morning and night as a drink, in a pint of warm ale, and the same quantity of thin gruel.

If the cow should continue to swell, relief must be obtained by means of the proper flexible pipe for that purpose; and if the proprietor has the pump which should accompany the pipe, some gallons of warm water in which a little ginger has been boiled may be thrown into the paunch, to wash out a portion of its contents. Should not the pipe be at hand, an opening may be made into the paunch at the flank with a sharp-pointed knife, in the usual farrier's manner: and if the case is becoming absolutely desperate, the operator would be justified in enlarging the opening so as to admit the hand and gradually take out the greater part of the indigested food. The edges of the wound should then be brought together and held by two or three stitches, the divided skin and the divided paunch being included in each stitch.

It will be right now to use some external stimulant, and the best is the rheumatic embrocation (No. 6), already recommended under rheumatism, p. 59.

There is one thing that should not be omitted, and that is the attempt, two or three times every day, to bring back the milk, by diligently stroaking the teats. As the drying up of the milk is the earliest symptom of the attack of the disease, so the return of it is the happiest promise of recovery.

If the cow does not get up on the third or fourth day there is but little chance that she ever will. The case, however, should not be abandoned, for she has done well even after the fourteenth day.

The third or fourth day being passed, it will be apparent that purgatives will not succeed. Diuretics may now be tried. The most likely to do good is the following:

RECIPE (No. 28.)

Diuretic Drink.

TAKE—Common turpentine, half an ounce;
Ginger, two drams:
Mix them together with a little treacle, then gradually add,—
Spirit of nitrous ether, one ounce:
Give the whole in a pint of gruel.

This may be given morning and night, and the cordial drink (No. 26, p. 106) at noon, except that now a glass of gin may be substituted for the ale.

If the udder is hard and knotty the camphorated oil (No. 8, p. 59) may be well rubbed over it twice every day; if it is very hot, fomentations of warm water may be used, but no cold lotion should be applied.

As the cow is frequently unwilling, and sometimes unable, to take sufficient nutriment herself, some nutritious food should be horned in; and there is nothing better than good thick gruel. Two or three quarts given four times every day will be enough. All sweet things, which farmers are so apt to give, should be omitted; the food in the paunch is sufficiently ready to ferment without giving any sugar. A very small quantity is allowed to mix with the turpentine, which will not otherwise combine with the other ingredients in the diuretic drink, but no other sweet thing can be admitted.

A cow labouring under milk fever should scarcely ever be left. She naturally gets very tired of couching so long, and sometimes attempts to shift herself, and would bruise herself if assistance were not afforded; beside which, in the early stage of the disease, and occasionally afterwards, there is some affection of the brain, and the animal is half unconscious of what she does, and would beat herself sadly about if care were not taken of her.

I must again repeat that prevention is better than cure, and that the best, and in fact an almost certain preventive of milk fever is not to let her be in too high condition, and to take four or five quarts of blood from her, and give her a physic drink eight or ten days before the expected time of calving.

CHAP. XVII.

FEVER WITH SWELLING, AND PARTICULARLY OF THE MOUTH AND TONGUE.

THIS is by no means an unfrequent disease, and is commonly known by the name of *blain*, *hawkes*, or *gargyse*. It is generally not discovered until it has made some progress, and then appears with a swelling of some part of the body, and, in a few instances, I have seen it extend almost over the whole surface of the body, accompanied with considerable fever.

The animal appears dull and languid; the eyes red and inflamed, with tears trickling from them.

A swelling begins about the eyes, and occasionally appears on other parts of the body; but there are generally blisters under the tongue, or at the back part of the mouth; the pulse is quicker than natural; more or less beating of the flanks; and the bowels are sometimes constipated. When the complaint is not checked at the onset there is often a copious flow of saliva from the mouth; the beast becomes extremely weak and reduced, and is in danger of being suffocated.

Causes.—Those cattle are the most subject to this complaint that are in high condition, and feeding on rich pasture grounds. It appears in many cases to be brought on by a redundancy of blood in the system, or from the beast taking cold while in that state. It is most prevalent in the summer months, especially when the weather is hot and sultry, by which the animal is oppressed, and the healthy functions of the body deranged.

The remedy, and often a very expeditious one for this disease, is to cut deeply, and from end to end, the bladders that will be found along the side of and under the tongue. They will appear to be filled with a glutinous matter, and, although there may not be much bleeding from them at first, considerable bloody fluid will gradually oose out, the swelling of the mouth and head will subside, and the beast will be very much relieved. All the curious operations of thrusting sticks and tar down the throat have this for their object, to break these bladders: but this is best effected by the knife.

If, however, much fever has accompanied the enlargement of the tongue, it will be prudent to take away five or six quarts of blood, and to give a physic drink, and particularly if, on the day following the operation, the beast should continue to be feverish. The mouth may likewise be washed with a solution of alum, or with equal parts of tincture of myrrh and water.

If the fever continues, the fever drink (No. 1, p. 54) may be given morning and night, and the bowels kept open by the purging drinks (No. 2 or 4, p. 55 and 58).

Should considerable weakness and loss of appetite remain when the fever seems to be subdued, the following tonic drink may be given:

RECIPE (No. 29.)

Tonic Drink.

TAKE—Gentian, two drams;
Tartrate of iron, one dram;
Ginger, one dram:
Mix, and give in a pint of gruel.

This may be repeated daily, or twice a day, as circumstances may require.

CHAP. XVIII.

THE BLOOD, BLOOD-STRIKING, BLACK-LEG, QUARTER EVIL, OR BLACK-QUARTER.

THE disease which I am now to describe is indicated by these curious names, and a great many more, in various parts of the country. Very few of these names, however, are misplaced, for they indicate some variety, or symptom, or stage of this dreadful malady. It would be much better recognised by the title of *Inflammatory Fever*.

Its attack is confined almost entirely to animals that are in high condition, or rapidly improving; I should say too high condition, and too rapidly improving. In some instances the disease will give some warning of its approach, but, generally, the beast appears to be to-day perfectly well, and to-morrow he will be found with his head extended, his flanks heaving, his breath hot, his eyes protruding, his muzzle dry, his pulse quick and hard; every symptom, in short, of the highest state of fever. He utters a low and distressing moaning; he is already half unconscious; he will stand for hours together motionless, or if he moves, or is compelled to move, there is a peculiar staggering referable to the hind limbs, and generally one of them more than the other: by and bye he gets uneasy, he shifts his weight from foot to foot, he paws faintly, and then lies down. He rises, but almost immediately drops again, and at length falls to rise no more.

He now begins to be, or has already been, nearly unconscious of surrounding objects: and in addition to the previous staggering, referable to one leg, many other symptoms appear, from which the different names of the disease arose. On the back or loins, or over one of the quarters, there is more or less swelling; if felt when it first appeared it is hot, and tender, and firm, but soon yielding to the touch, and giving a singular crackling noise when pressed upon. The same limb likewise enlarges, sometimes through its whole extent, and that enormously. It, too, is firm, and hot and tender, but it soon afterwards is soft and flabby, or pits when pressed upon, *i. e.*, the indenture of the finger remains. When examined after death, that limb is full of red putrid fluid; it is mortified, and seems to have been putrefying almost during the life of the beast. Large ulcers break out in this limb, and sometimes in other parts of the body, and almost immediately become gangrenous; pieces of several pounds in weight have sloughed off, three-fourths of the udder have dropped off, or been so gangrenous that it was necessary to remove them, and the animal has been one mass of ulceration. The breath stinks horribly; a very offensive, and sometimes purulent and bloody fluid runs from the mouth: the urine is high-coloured or bloody, and the fœces are also streaked with blood, and the smell from them is scarcely supportable.

In this state the beast will sometimes continue two or three days, at other times he will die in less than twelve hours from the first attack. In a few instances, however, and when the disease has been early and properly treated, all these dreadful symptoms gradually disappear, and the animal recovers.

Although much evil has resulted from the putrefied carcases of the beasts that have died of blood being suffered to lie about, yet it does not appear that there is anything infectious about the disease. It is true that if one bullock on a farm dies of the blood, many will usually follow; but it is only because they have been exposed to the same exciting cause. Fortunately also for the farmer, it is almost confined to young cattle. Those that are between one and two years old are most subject to it, but some of three and four years are attacked by it, and I have seen those of double that age die under it. Milch cows, or lean cattle, are in a manner exempt from it.

It is to a redundancy, or overflowing of the blood, the consequence of the sudden change from bad to good living, that this disease most commonly owes its origin. It is most prevalent in the latter part of the spring and in the autumn; and very often, at those seasons of the year, proves destructive to great numbers of young cattle in different parts of the kingdom. It does, however, sometimes occur in the winter and the early part of the spring, when they are feeding on turnips. Some situations are more subject to this complaint than others. I have observed it most frequent in low, marshy grounds, and pastures situated by the side of woods. In these places the air is apt to be loaded with moisture, which relaxes the animal frame, and lessens perspiration, thereby deranging the healthy functions of the body, by which means the frame is prepared for the disease.

It is a disorder of high condition and over-feeding. The times of the year prove this—the latter part of the spring, when the grass is most luxuriant and nutritive, and the autumn, when we have the second flush of grass; and also the character of the cattle, which are those principally that are undergoing the process of fattening, and that have somewhat too suddenly been removed from scanty pasturage and low feeding to a profusion of herbage, and that of a nutritious and stimulating kind. This sometimes happens when they have been moved from one pasturage to another on the same farm; but more so when they have been brought from poor land, at a distance, to a richer soil. There are in the latter case two preparatory causes, the previous poverty, and the fatigue and exhaustion of the journey.

Farmers may endeavour to account for it as they please, from the cattle having fed on certain acrimonious or poisonous plants, as the different species of the crowfoot, or some others; but there cannot be a moment's doubt that the evil is to be traced to their own bad management, and to that almost alone. I will not say that there may not be some atmospheric agency. The blood is much more prevalent on some years than on others, and more fatal when it does occur; but if the fact be carefully examined, rapid vegetation has then succeeded to a cold and thriftless season, and so the causes of which I have spoken have been more powerfully called into action, while the influence of the atmosphere may have materially influenced the character of the disease after it had been produced.

In examining cattle that die of this complaint the affected part or parts are found mortified, and emit a peculiar cadaverous effluvium; and there is a glutinous or bloody ichorous fluid of a very offensive smell between the skin and flesh. In two instances I found the membranes of the brain mortified, being here and there of a livid colour, and easily torn.

This disease rarely admits of cure, but fortunately it may in general be prevented. If the disease is discovered as soon as it makes its appearance, the beast should be immediately housed, and then from four to eight quarts of blood taken away, according to the age and size. Two hours after bleeding give the following purging drink (No. 2, p. 55), which will be found of a proper strength for young cattle from the age of one to two years.

The bleeding should be repeated in three or four hours, if the animal is not materially relieved; and a third bleeding must follow the second, if the fever is unabated. There must be no child's play here; the disease must be knocked down at once, for it will inevitably destroy the beast. The physic likewise must be repeated until it has its full effect.

As soon as the bowels are well opened, the fever drink (No. 1, p. 54) should be administered, and repeated morning, noon, and night, all food except a little mash being removed.

At the first appearance of the disease, the part principally affected should be fomented several times in the course of the day with hot water, for at least an hour each time. For this purpose there should be two or three large pieces of flannel in the hot water, that after one of them has been applied thoroughly hot and dripping to the part affected, another equally hot may be ready when this gets cold.

As soon as the fever begins evidently to subside, and the beast is more himself, and eats, the fever medicine must not be pushed too far. It should be remembered that it is a case of inflammatory fever, which soon passes over, and is often succeeded by debility almost as dangerous as the fever. The ox, therefore, must not be too much lowered; but, the fever abating, the following mingled tonic and fever medicine should be given:

RECIPE (No. 30.)

Mildest Tonic Drink.

TAKE—Gentian, two drams;
Emetic tartar, half a dram;
Digitalis, half a dram;
Nitre, half an ounce;
Spirit of nitrous ether, half an ounce;
Give in gruel.

If this does not bring back the safely continued once every day u well; or the quantities of the ge increased, and the emetic tartar lessened, and at length altogether nitre being still retained.

A seton (of black hellebore root if cured) should be inserted in the d the beast can be moved, it should much scantier pasture.

Should not the disease be discove is considerable swelling, and a crac some tumefied part, a cure is sel Bleeding, at this stage of the comp dom be resorted to, or, at least, bleeding only should be resorted to subdue any lurking fever that may cure is in these cases attempted No. 10 should be given, which ma the system by its cordial and tonic prevent the mortification extending.

The swelled parts should be frequ with equal parts of vinegar and spiri made as hot as the hand will be ulceration seems to be at hand, slig should be made along the whole ext swelling, and the part bathed with spirit tine made hot.

If ulceration has commenced, accom the peculiar fœtor that attends the d wounds should be first bathed with a disinfectant lotion.

RECIPE (No. 31.)

Disinfectant Lotion.

TAKE—Solution of chloride of lime, one ounce;
Water, nine ounces.—Mix.

The hot spirit of turpentine should be applied immediately after this, and continued in use until either the mortified parts have sloughed off, or the sore begins to have a healthy appearance. The tincture of aloes or Friar's balsam may then follow.

Since so little can often be done in the way of cure, we next anxiously inquire whether there is any mode of prevention. The account which I have given of the disease immediately suggests the prevention, viz., to beware of these sudden changes of pasture; now and then to take a little blood from, or to give a dose of physic to those which are thriving unusually rapidly, and, whenever the disease breaks out on the farm, to bleed, and to purge, and remove to shorter and scantier feed every animal that has been exposed to the same exciting causes with those that have been attacked. The farmer should be particularly watchful during the latter part of the spring and the beginning of the autumn: he may thus save many a beast, and the bleeding and the physic will not arrest, but rather assist their improvement. He who will not attend to a simple rule like this, will deserve the loss that he may experience.

CHAP. XIX.

MURRAIN, OR PESTILENTIAL FEVER.

THIS is not the fever which I have just described, more rapidly, and to a greater extent, assuming the typhoid and malignant form, although there is a considerable similarity between the diseases, but it is distinguished by some peculiar and fatal characters. It has from time to time destroyed immense numbers of cattle in every part of the continent of Europe. Its ravages have not been so dreadful in our country. The disease, like some others, appears to have been imported from the continent, but to have lost much of its malignity in crossing the channel which divides us from the rest of Europe; yet in the spring of the year 1714 more than 70,000 cattle died of this pest in England.

Fortunately of late years this destructive malady has been comparatively unknown among us, except that in some districts a few cases have occurred every year. Its latest visitation, clothed with all its most dreadful attributes, was in 1768. It is thus described by Dr. Layard, an intelligent physician of that period: "The animal was found with its head extended, that its laborious breathing might be accomplished with less dread of suffocation; there was considerable difficulty in swallowing; enlargement of the glands under the ear, and frequently swelling of the whole of the head; uneasiness about the head; seemingly itchiness about the ears; dulness; frequent, but not violent heaving. To these succeeded staggering and great debility, until the animal fell, and was afterwards either unable to stand long at a time, or to stand at all. A constant discharge of green bilious stinking fœces now appeared; the breath was likewise offensive; the very perspiration was sour and putrid; the head swelled rapidly; the tongue protruded from the mouth; and the saliva, at first stinking, but afterwards purulent, bloody, and more and more offensive, flowed from the mouth. A crackling was heard under the skin when the back or loins were pressed upon; tumours appeared, and abscesses were formed in various parts; they multiplied and they spread, and discharged a dreadfully stinking fluid.

"By and by a fresh access of fever seemed to supervene; the breath got hot, and the extremities were cold; the purging increased, and was even more offensive; the urine and the dung excoriated the neighbouring parts as they passed away; and on the seventh or ninth day the animal usually died."

If a milch cow was attacked her milk dried up gradually, her purging was more violent, and her debility more rapid than that of other cattle. Bulls and oxen were not so violently seized as cows and calves; and cows with calf, and weakly cow-calves, were most in danger. If cows slipped their calves they usually recovered. Calves received the infection from the cow, and the calf on the other hand often infected the cow.

The disease was epidemic. It depended on some atmospheric influence, which we are unable to understand; but at the same time it was contagious, and that to a very great degree. If it once appeared on a farm almost all the cattle were sure to be affected; yet it was found out that the power of infection did not extend more than a few yards; and a hedge often separated the dead from the living. The murrain seemed mostly confined to cattle, for horses and sheep, and swine and dogs, lived in the midst of the infection and escaped, and even some neat cattle seemed to possess a security from infection.

The favourable symptoms were eruptions on various parts of the body, not indeed too numerous, and their breaking and discharging plenty of purulent matter. If from exposure to cold, or other improper treatment, the boils were repelled, if they gradually lessened and disappeared, death was an almost inevitable consequence. If the dung became more consistent, and the urine not so highly coloured, and the mouth cooler, and the beast began to brighten up, and look a little cheerfully around him, there was hope; but if the boils receded, and the scouring became constant, and the breath was hot, and the horns were cold, and the difficulty of breathing increased, and the animal groaned at every motion; if the eye sunk, and the pulse intermitted, and the beast was almost unconscious, and a cadaverous smell proceeded from him, it was seldom that he escaped.

On examination after death, the whole of the cellular texture under the skin was distended either by air, or a sanious fluid, and in most cases partly by both. The air rushed out when the skin was punctured, and stunk most abominably, and the cellular texture and the muscles were rendered livid and black by the dark fluid which they contained. The brain and its membranes were inflamed, and the ventricles distended. The mouth and nose, and fauces and throat, and the frontal sinuses to the base of the horn, and even to its tip, were filled with ulcerations and with pus. The lungs were inflamed in patches, and filled with tubercles. The liver was large, and so rotten as to be torn by the slightest touch. All the vessels of the liver and the gall bladder were gorged with greenish fœtid bile. The paunch was distended with wind, and undigested and, generally, hardened food. The third stomach contained between its leaves a quantity of dry and hardened food, so hard and brittle that it might be easily broken; and the fourth stomach, or rennet bag, was empty, but highly inflamed and gangrened in various places. The intestines were also beset with livid and black spots. The uterus of those that were in calf was gangrened, and the smell from the fluid which it contained was almost insufferable.

It seemed to be a high degree of fever, which had speedily run on to a typhoid and malignant form, and by which every part of the frame was poisoned.

We have not for a long while been visited to any great extent by this malady, and should it occur, the veterinary art is far more advanced than it was many years ago, and there is reason to hope that it would not be so destructive as in times past.

The treatment would be, first, and the most important thing of all, to separate the diseased from the sound; to remove every animal that seemed to be in the slightest degree affected to some isolated portion of the farm where contact with others would be impossible. It would be imprudent to remove those that appeared to be unaffected, because it would be impossible to know that the virus did not lurk in their veins, and thus the poison might be conveyed to other parts of the farm. The sick only should be removed, and that as speedily as possible.

In the early stage of the disease there can be no doubt of the propriety of bleeding. The fever, which, according to every account, characterises the first attack, should, if possible, be subdued, otherwise its prolonged existence would aggravate, if it did not cause, the subsequent debility. The animal should be bled, in proportion to his size, condition, and the degree of fever: he should be bled in fact until the pulse began to faulter, or he began to stagger. The blood should be taken in as full a stream as possible, that the constitution may be more speedily and beneficially affected. If the blood flows slowly, a quantity may be taken away before the animal begins to feel it that would afterwards produce alarming debility; but if the blood flows freely, the beast will show symptoms of faintness, the effect we wish to produce, before one-fourth of the quantity is drawn, that would be lost if it ran in a slow stream. We want to attack and subdue the fever, without undermining the strength of the frame.

Then we should with great propriety administer a brisk purgative. If fœtid and obstinate purging so soon follows, we should be anxious to get rid, if we can do so, of a portion of the offending matter, and therefore a pound or twenty ounces of Epsom salts should be given in a sufficient quantity of thin gruel.

Next, as it is a disease so much and so easily characterised by debility, we should attend to the diet. Green succulent grass would scarcely be allowed, because it would probably not a little increase the purging; but mashes of bran, with a little bean-meal, carrots, or sweet old hay, should be allowed in moderate quantities. The animal should be coaxed to eat; for it is necessary that the constitution be supported against the debilitating influence of the disease. The cow should not be at once drenched, for this might produce nausea and disgust for food; but if two or three days should pass and the beast should obstinately refuse to eat, it must be drenched with warm thick gruel. As for medicine, I scarcely know what to advise. The fact stands too clearly upon record, that nineteen animals out of twenty, seized with the murrain, have died. That on which I should put most dependence would be the following:—

RECIPE (No. 32.)

Drink for Murrain.

TAKE—Sweet spirit of nitre, half an ounce;
Laudanum, half an ounce;
Solution of chloride of lime, two drams;
Prepared chalk, an ounce:
Rub them well together, and give them with a pint of warm gruel.

This may be repeated every six hours, until the purging is considerably abated; but should not be continued until it has quite stopped.

The purging being abated, we must look about for something to recal the appetite and recruit the strength, and I do not know any thing better than the following:—

RECIPE (No. 33.)

Tonic Drink for Murrain.

TAKE—Columba root, two drams;
Canella bark, two drams;
Ginger, one dram;
Sweet spirit of nitre, half an ounce:
Rub them together, and give in a pint of thick gruel.

There cannot be a more proper means adopted than a seton in the dewlap, made with the black hellebore root. The mouth should be frequently washed with a dilute solution of the chloride of lime. The ulcerated parts, if they are fœtid, should have the same disinfectant applied to them, and the chloride sprinkled about the cow-house, and its walls and ceiling washed with it.

One caution should be used with regard to the food; while the beast should be coaxed to eat, in order to support him under the debilitating influence of the disease, it is only on the supposition that he ruminates his food. Until he begins again to chew the cud, we are only injuriously overloading the paunch by enticing the animal to eat. Until rumination is re-established the food should consist of gruel, or any other nutritive fluid, the greater part of which will pass on into the fourth stomach, without entering the first. On recovery, the beast should be gradually exposed to cold air, and by degrees habituated to his usual food.

When the disease is quite subdued the cleansing of the cow-house should be seriously undertaken, and thoroughly accomplished. Let every portion of filth and dung be carefully removed, the walls and the wood-work and the floor carefully washed with water, or soap and water, and then every part washed again with a lotion, in the proportion of one part of the saturated solution of the chloride of lime to forty parts of water. This will be better than any fumigation that can be possibly applied. Should, however, the chloride of lime not be at hand, then a simple and cheap fumigation, on which very considerable dependence can be placed, may be resorted to.

RECIPE (No. 34.)

Fumigation.

TAKE—Common salt, two pounds;
Oil of vitriol, one pound.

The salt should be put in an earthen vessel, and placed in the middle of the cow-house, and the oil of vitriol gradually poured upon it. They should be stirred well together with a stick, and the person preparing the thing should retreat as quickly as he can, to prevent himself from suffering by the fumes of the chloride, closing the door carefully after him, every window and aperture having been previously closed. In a few hours he may enter the cow-house again, and remove the vessel without any serious inconvenience.

There is every reason to hope that the murrain will never again thin our herds of cattle to any great extent, not only because veterinary science is so much advanced, and the farmer can have immediate recourse to the assistance of a skilful practitioner, but because agriculture has been so much improved within the last century, and particularly that important and most beneficial system of underdraining has been introduced. When the murrain so sadly prevailed in foreign countries, and in England, it uniformly commenced in, and was chiefly confined to, some low marshy district. This was particularly the case in the murrain which prevailed in France in 1779. It was principally confined to the low meadows and marshes, and it appeared soon after an unusual inundation had subsided. In Italy, where the murrain has been more prevalent and fatal than in any other country, it always commences in some of the extensive and pestilential marshes with which the Italian coast abounds. In the account of a pestilence that carried off thousands of cattle in Hungary it is said that the spring had been rainy, with great changes in the temperature of the atmosphere. This will afford a useful hint to the farmer as to the system of agriculture he should pursue, and the situation to which he should, if possible, remove his cattle when any pestilential disease breaks out. The infected cattle, and the herd generally, should not only be removed to some rather elevated and dry situation, but sheltered as much as possible from the sudden variations of the external air, at least by night.

It is to be hoped, too, that some legislative provision will be made to prevent as much as possible the spread of the disease; that every animal seriously affected shall be immediately consigned to the slaughter, and no portion of the hide or carcase permitted by any means to be used, but the whole deeply and speedily buried.

When the murrain was so prevalent in Holland, and it seemed as if every beast was destined to catch it, some speculative men had recourse to inoculation. The matter discharged from the nostrils, or from an ulcer of a beast not apparently affected with any very virulent form of the disease, was inserted under the skin of a sound animal. The disease was produced, sure enough, but with very doubtful and often lamentable effect. In some cases a worse disease was induced. In a few was it materially mitigated; a considerable proportion still died, and doubtless some who would have escaped the disease, had it not been for the inoculation.

CHAP. XX.

INFLAMMATION OF THE BLADDER.

This disease does not often occur in cattle, except from eating acrid and poisonous herbs, or when cows are near their time of calving. In the first case, there are frequent and violent, but ineffectual, efforts to stale. There is proper inflammation of the neck of the bladder, occasioned by cold, or more frequently by feeding on heathy pastures, and on the hot and stimulating plants that abound there. The *broom* is a frequent cause of this disease.

It is of some consequence to be enabled to distinguish this from inflammation of the bladder itself. In the early stage of the complaint no urine will be voided, while it frequently will in the other; and when at length, in inflammation of the neck of the bladder, urine is frequently voided, it is evidently forcibly squeezed out from the over distended but closed vessel. The most certain way, however, of distinguishing the one from the other is to introduce the hand into the rectum; the distended bladder will then be plainly felt below. It may sometimes be plainly felt by examination on the outside of the belly.

The course to be pursued is sufficiently plain; the bladder must be emptied, or more fluid will pour into it until it actually bursts. The better way of emptying it is, if possible, to relax the spasm of the neck of the bladder. It is the spasmodic action of the sphincter muscle of the neck of the bladder that is the cause of obstruction. A very large bleeding will sometimes accomplish this; but it must be a large one, and continued until the animal is exhausted almost to fainting. For some time before the fatal termination of the complaint by the giving way of the bladder, not only the constant straining, but the heaving of the flanks, the quickness of the pulse, the loss of appetite, the cessation of rumination, and the shivering fits, will sufficiently indicate the extent of the danger. To bleeding, physic should succeed, to lower the system, and relax the spasm; but not medicine which may possibly increase the flow of urine. Sulphur, or aloes, or both combined, would be here dicated.

Should not the flow of urine be re-establishe mechanical means should be resorted to. Here a skilful practitioner should be consulted. The water may be readily drawn from the cow by a catheter; but in the ox, from the curvature of the penis, this would be a very difficult affair. Some have recommended to cut down upon the penis, behind the bag, and lay open the urethra, and so pass a catheter into the bladder; but this will produce a wound, difficult to heal from the passage and excoriation of the urine. Others would puncture the bladder through the rectum, and others through the belly; but both operations may be accompanied and followed by various unpleasant circumstances.

An instrument is now preparing, and nearly completed, by an intelligent veterinary instrument maker, Mr. Reed, of the Regent's Circus, in London, which, curiously accommodating itself to the curvature of the passage, will readily enter the bladder, without any operation, and completely evacuate it.

Inflammation of the bladder itself is a disease more frequent, and from the same causes, namely, cold and acrid herbs. Here the animal should be bled and physicked, and fomented across the loins, and every diuretic medicine should be carefully avoided. The following drink may be administered with good effect, after the bleeding and purging:—

RECIPE (No. 35.)

Drink for Inflammation of the Bladder.

TAKE—Antimonial powder, two drams;
Powdered opium, one scruple:

Rub them well together with a small portion of very thick gruel, and repeat the dose morning and night.

It should not, however, be forgotten, that in cows that are near parturition this discharge of urine is not unfrequent, and arises from irritation of the bladder caused by the pressure of the fœtus, or from sympathy with the uterus, now much excited, and not from actual inflammation. When she has calved, this will gradually cease, or a dose of salts, followed by one or two of the powders just recommended, will afford immediate and considerable relief. In some cows this incontinence of urine has been produced by the retention of a dead calf for a considerable time in the womb, and it being at the same time in a state of putrefaction. The mingled influence of long continued pressure, and of proximity to a large body in a state of decomposition, will occasionally produce a state of extreme irritability. The animal should have warm mashes once or twice daily.

Connected with this is a not unfrequent disease, and especially in the summer, and in cows in high condition, namely—

INFLAMMATION OF THE SHAPE.

The external parts are very much swollen, and pustules or boils appear about them, that break and discharge much matter, and there is also a considerable discharge of glairy fluid from the vagina.

This sometimes occurs after difficult calving, or from taking cold when the calving has been easy and natural; it has occasionally followed bulling, and it has been seen at other times. Every action of the animal shows that she labours under extreme irritation, and suffers a great deal.

She should be bled and physicked. It will often be advisable to give a couple of doses of the physic, with an interval of three days. The shape should be well fomented several times in the day with warm water, until the swelling is a little subdued. A common goulard-wash, consisting of one ounce of the extract to a quart of water, with the addition of an ounce of spirit of wine, will then be serviceable.

An unpleasant gleet will often remain for a considerable time after the swelling has subsided, and the ulcers have healed. An astringent injection will then be useful. The one that should be first tried is composed of six ounces of bruised oak-bark, boiled in two quarts of water, until it is reduced to three pints. If this should not succeed, a solution of alum, in the proportion of a quarter of an ounce to a quart of water, may be tried. A common injection syringe, of tolerably large size, will be the best instrument for throwing up the lotion.

CHAP. XXI.

DISEASES OF THE EYE.

Oxen are very apt to receive injuries about the eye, as wounds penetrating into the orbit of the eye, or even fractures of the orbit. The principal thing is to prevent or abate inflammation, by fomentations or poultices, and a little physic, and to leave nature pretty nearly to herself. Either from injury, or from a disposition in the bullock to throw out tumours of every kind, there are frequently bony tumours about the eyes of oxen. It will be easily seen how far they are a nuisance to the animal, or impede the sight; and if it be necessary to remove, the aid of a professed practitioner on cattle should be obtained, as an important vessel may be divided, or a sad blemish left.

Soft fungous tumours sometimes grow out of the orbit, or from the bone around. These can only be got rid of by the use of the knife, and that should be placed in a skilful hand.

The eyelids of the ox are often subject to disease; sometimes there is a scaliness around the edges; sometimes a row of pustules resembling the stye of the human; and they seem to be a great source of annoyance at the time. They appear early in the spring of the year, and continue during the summer and the greater part of the autumn, and disappear as winter comes on. A solution of white vitriol, in the proportion of a dram to a pint of water, will often be a useful application. If this fails, the nitrated ointment of quicksilver may be smeared over the lid, taking care that none of it gets into the eye. It will, however, be necessary at times to prepare for the use of these by washing the part with a goulard lotion for a few days.

Young oxen are subject to warts, which are sometimes sadly teasing. They would probably disappear after a while, but in the mean time they are unsightly, and sometimes annoy the animal very much by getting between or within the lids. They may either be clipped off with a pair of scissars, touching the root afterwards with the lunar caustic, that the wart may not be reproduced; or, the best way, when practicable, is to remove them by tying a ligature of fine strong silk tightly round the pedicle or root.

The eye itself is not unfrequently and very acutely inflamed. The horse has a little shovel, concealed in the inner corner of the eye, which he is enabled to protrude whenever he pleases over the greater part of the eye, and by aid of the tears to wipe and wash away the dust and gravel which would otherwise lodge in the eye, and give him much pain. When the haw is swelled in disease the ignorant farrier too often cuts it away, not knowing that it is the mere effect of inflammation, and, that a little cooling lotion would probably abate that inflammation, and lessen the swelling, and restore the part to its natural size and utility. The ox has nothing that will answer this purpose; and, when he travels over a dusty road in the heat of summer, he sadly suffers from the small particles of dirt and the insects that are continually flying into his eye. This is unobserved by the careless driver, and inflammation is established, and the eye weeps, and becomes dim, and sometimes blindness follows.

But from other causes, causes of which we know nothing, *inflammation of the eye* is produced, and it goes and comes as in the horse, time after time, the attack being gradually more severe, and the intervals between the attacks shorter, until, as in the horse, the inflammation extends to the internal part of the eye, and the lens becomes opaque, and *cataract* ensues, and the ox is incurably blind.

This must be dealt with as all other inflammations are. Bleeding, physicking, and fomentations, are the principal means and appliances at first. The blood should be taken from the jugular, for that is supplied by the veins coming from the inflamed part. If the bleeding is ever local, the lid should be turned down, and the lining membrane lightly scarified. A few drops of blood thus obtained will often do a great deal of good. The fomentation having been continued for a day or two, one of the two following lotions should be used, a few drops of it being introduced into the eye two or three times every day:—

RECIPE (No. 36.)

Sedative Eye Lotion, 1.

TAKE—Dried leaves of foxglove, powdered, 1½ ounce:

Infuse in a pint of Cape, or dry raisin wine for a fortnight, and keep it for use.

There cannot be a better sedative in the early stage of inflammation of the eyes.

In many cases this alone will effect the temporary or perfect removal of the inflammation; but should not the eye improve, or should it appear to become insensible to the influence of the tincture, try the next prescription:—

RECIPE (No. 37.)

Sedative Eye Lotion, 2.

TAKE—Extract of Goulard, two drachms;
Spirituous tincture of digitalis (made in the same manner as the vinous in the last recipe), two drams;
Tincture of opium, two drams;
Water, a pint:

This should also be introduced into the eye. Two or three drops at a time will suffice.

The inflammation being subdued by the one or the other of these applications, or even bidding defiance to them, and assuming a chronic form, a lotion of a different character must be had recourse to.

RECIPE (No. 38.)

Strengthening Lotion for the Eye.

TAKE—White vitriol, one scruple;
Spirit of wine, a dram;
Water, a pint.

Mix them together, and use the lotion in the same manner as the others.

When the inflammation runs high, the transparent part of the eye is apt to ulcerate, and a fungous substance sprouts, and sometimes protrudes through the lids. This should be very lightly touched with a solution of nitrate of silver, or, if it be very prominent, it should be cut off, and the base of it touched with the caustic.

A seton in the dewlap will always be beneficial in inflammation of the eye, and it should either be made of the black hellebore root, or cord well soaked in turpentine.

Of one circumstance the breeder of cattle should be aware—that blindness is an hereditary disease, and that the progeny of a bull that has any defect of sight is very apt to become blind.

If the case be neglected, inflammation of the eye will sometimes run on to *cancer*, and not only the eye, but the soft parts around it, and even the bones, will be affected.

When this termination threatens, the globe of the eye will usually turn to a bottle-green colour, then ulceration will appear about the centre of it, and either the fungus, of which I have spoken, will sprout, and the eye will become of three or four times its natural size, or it will gradually diminish and sink into the orbit. The fluid discharged from it will be so acrid that it will excoriate the parts over which it runs, and the lids will become swollen and ulcerated.

The radical cure, and the most humane method to be adopted with regard to the animal, is to remove the eye. Here the assistance of a veterinary practitioner will be indispensable.

If the owner does not think proper to adopt this method, let him at least try to make the poor beast as comfortable as he can. The part should be kept clean, and when there appears to be any additional inflammation, or swelling, or pain, the eye should be well fomented with a decoction of poppy-heads. Let none of the stimulating ointments or washes of the farrier be used. This would be cruelly punishing the animal, when no good purpose could possibly be effected.

Sometimes the centre of the eye is not so much affected as the haw at the inner corner of it. When that part merely *enlarges* from the inflammation of the eye generally, the digitalis or the goulard wash will generally abate the swelling; and he would be both ignorant and cruel who would remove it on account of simple enlargement accompanying inflammation; but when it becomes hard and schirrous, and especially if fungous granulations begin to spring from it, it is quite a different case. No sedative or other lotion will lessen the schirrous or the fungous tumour. It must be removed by an operation;—it must be cut away. The method of accomplishing this by a skilful practitioner is not difficult. The beast must be thrown, and the head held firmly down by an assistant. The operator then passes a curved needle, armed with a double strong silk, through the body of the tumour, and, drawing a portion of the silk through it, gives the needle and the end of the silk to be held by another assistant. He pulls the silk gently, but firmly, until he draws the tumour as far as possible from the corner of the eye, so that the attachment of its base may be seen. The operator then with a knife dissects it out, or with a pair of scissars snips it off. No bleeding of any dangerous consequence will follow, and the blood that is lost will abate the inflammation, and ease the pain which the animal had previously endured. The removal by ligature is a slow and not always effectual method of proceeding, for it may not be possible to apply it accurately around the very base of the tumour, and then it will probably be reproduced. It is also necessary to tighten the ligature every day, or every second day, and thus must the contest with the beast be often renewed if this mode of removing the tumour be adopted.

CHAP. XXII.

THE HOOVE, HOVEN, OR BLOWN.

THE reader will recollect the account which was given at page 23 of the paunch, or first stomach of cattle. The food, after undergoing a short and partial mastication, is received into this stomach, and there it remains undergoing a process of maceration, while by the muscular action of the stomach revolving in it, until the animal, having satisfied his appetite, either stands still, or lies down: then the food is returned pellet after pellet, in the order in which it was received, to be rechewed, and prepared to pass on to the fourth or true digestive stomach. That the food may thus revolve, and pass out in the exact order in which it entered, and that no portion shall remain to ferment and putrefy, it is evidently necessary that the stomach should not be perfectly filled; and it is also evident that the vegetable food contained for any considerable length of time in the closed warm stomach would begin to ferment, and the consequence of that fermentation would be, the extrication of gases of different kinds, and in considerable quantity.

If a beast is turned into a new and fresh pasture, the taste of which is pleasant to him, he eats rapidly; and he will not leave off when the stomach is tolerably filled, but will graze on until it is quite distended, and an uneasy sense of fulness compels him to desist. The stomach might act upon that which nearly filled it, and cause it to revolve, and so produce for remastication each portion of food in its turn; but it cannot possibly do so when it is pressed out and distended on every side, and especially as the interior surface of the stomach is uneven and divided into numerous cells; thus the portion which lies nearest to the orifice of the stomach, consisting of the last that was swallowed, is not prepared for remastication, and that which is sufficiently macerated to be returned is deeply buried under the rest, and so the process of rumination is suspended, and the stomach remains full. This macerated food, however, will not remain long in the warm moist stomach without fermenting, and, in the act of fermentation, a great deal of air or gas is extricated, which distends the stomach still more, to the danger of rupturing it, or suffocating the animal.

The symptoms of this disease are sufficiently known. The beast seems to swell, and that to an enormous extent; and, the stomach pressing against the diaphragm, the breathing is very laborious, and the animal is evidently in great distress, and appears to be threatened with immediate suffocation; so much so that if relief is not soon obtained the difficulty of breathing increases, and the animal is lost.

The treatment of this complaint consists in relieving the stomach from this distension. But how is this to be accomplished? Medicine seems to be almost or quite thrown away. If a drink is given, not a drop of it will find its way into the paunch, the entrance to which is so firmly closed, that it seems scarcely possible that even a ball should now break through the floor and enter the paunch. A very stimulating drink passing into the fourth stomach, and exciting it, may, by sympathy, excite the paunch to act; but it is difficult to conceive how it can possibly act while its fibres are put thus violently upon the stretch.

Something might have been done by way of prevention. If, when the cattle had been turned into this fresh pasture, they had been carefully watched, and removed again to the straw-yard, before the paunch had been too much gorged, and this had been repeated two or three times, the appetite would have been blunted, and this distressing complaint prevented.

Some farmers, an hour or two before they have turned such cows as are of a greedy disposition into a fresh pasture, have given them a cordial drink. The stomach has been stimulated by this, and has been induced to contract in time upon its contents; and this contraction has reminded the animal of the necessary process of rumination, or has rendered it almost impossible for him to continue to feed until some portion of the contents of the stomach has been returned and rechewed.

This is a very good precaution, and has seldom failed.

The following drink is as good as any that can be given:—

RECIPE (No. 39.)

Cordial Drink.

TAKE—Carraway and aniseeds in powder, of each an ounce;
Ginger, half an ounce:
Mix with a pint of good ale made hot.

The mischief, however, is done; the stomach is distended, and the animal must be relieved, or he will be suffocated. Nothing but mechanical means will now do.

Some drive the animal about. This is sadly cruel work; for he seems to be scarcely able to move, and is threatened with suffocation every moment. It has, however, been sometimes successful, especially if the beast is *made* to trot; for by the motion and the shaking of the stomach thus produced, the roof of the paunch has been forced a little open, and a portion of the air has escaped, and some of the food with it, and the stomach has been relieved from some of its distension, and has been enabled to act upon the remaining food, and the process of rumination has recommenced. It is, however, dangerous work; for in the act of moving with a stomach so distended, and pressing on every side, and upon the diaphragm as well as other places, it or the diaphragm is in danger of being ruptured.

Some have resorted to an operation. Midway between the last rib and the haunch bone, and a little below them, the distended paunch will be felt pressing up against the wall of the belly. A lancet or a pocket knife has been plunged into the animal at that spot, which has passed through the skin and the wall of the belly, and entered the paunch. The vapour has then rushed out with a hissing noise, and steamed up four or five feet high, and some of the contents of the bowels have been forced up with the gas, and the flanks have fallen, and the beast has evidently become less, and has been so much relieved that he has begun to ruminate, and has done well. The wound is left open for a while, that any newly formed gas may escape; it then soon heals of itself, or would almost immediately if its edges were brought together by a slip of adhesive plaister.

By some means or other, however, although present relief has been obtained, and the beast has ruminated and eaten, it has in a few days begun to show symptoms of indisposition, and has become feverish, and drooped, and died. We account for this by some of the gas and, perhaps, a portion of the food, getting into the belly, between the haunch and the flank, and falling down among the intestines, and causing irritation and inflammation there.

Some have adopted even rougher and more effectual methods of remedying the evil. They have not contented themselves with simply puncturing the paunch, but they have cut a hole into it through the flank large enough to introduce the hand, and so they have not only liberated the air, but have taken out the fermenting food by pailfuls. They have even gone so far as to pour in water, and fairly wash the paunch out. They have then brought the edges of the wound together by passing a few stitches through it, and including the substance of the flank and the wall of the paunch in each stitch, and afterwards covered the wound with adhesive plaister, when it has readily healed, and no bad consequence has ensued. This seems to be a butchering kind of work, and has always succeeded. Inflammation has ensued, and carried the animal off. Beside this, the paunch being suspended by these stitches, and afterwards hanging thus from the flank, is kept permanently out of its place, and is unable freely and fully to contract afterwards upon its contents; thus inflammation has ensued; and the subsequent want of condition in some of these animals, and the difficulty of fattening them thoroughly, is easily accounted for.

Some farmers go a little more judiciously to work. They thrust a flexible stick, perhaps a cart whip, down the throat, and through the floor of the passage beneath, and the roof of the paunch (described at p. 23), and so some of the gas escapes; and this, perhaps, would be effectual, if the stick could be kept there long enough, and the stomach did not close around it.

An instrument, first devised by Dr. Monro, and now brought to perfection by Mr. Read, of the Regent's Circus, will supersede every other method of relieving blown or hoven cattle. A kind of gag is placed across the mouth, with a hole in the centre of it, and a leather at each end to buckle round the horns. Through this is passed a hollow tube of stout leather, with a perforated knob at the end of it, and containing, to render it firm enough to be thrust down the throat, and flexible enough to accommodate itself to the bending of the passage, a stylet, or slender piece of cane or whalebone, extending through the whole of its length. The tube, thus strengthened by the stylet, is forced through the roof of the paunch into that stomach. The stylet is then withdrawn, and the air rushes violently out, and sometimes a good deal of fluid with it. The tube may be kept in as long as the operator pleases, or returned as often as may be necessary; and if it be passed down with a little caution, and not too rapidly and violently, no injury can possibly ensue.

Thus the gas and some of the fluid are liberated; but the solid contents, the undigested food, may remain, continuing to ferment, and so nauseous, that the animal is disgusted in the act of rumination. Mr. Read has a contrivance to remedy this. He cannot, indeed, extract the food from the stomach by his tube, but he can do that which is almost as beneficial. He attaches to the tube a pump, that can in a moment be altered, so as to be used either as a forcing pump, like a little garden engine, or as a common sucking pump, and by means of it he can inject as much water into the stomach as he pleases, and draw it out again, and wash away the impurities of the food, and a considerable portion of the food itself; or by using warm water and perfectly filling the stomach, he can excite the act of vomiting, and so get rid of the nuisance at once. This is an admirable contrivance, and no one who has many cattle should be without the pump and tube. Some are made on a smaller scale, so as to be adapted for sheep labouring under the same complaint, and they are as subject to it as oxen. Nothing can be better contrived for the administering of injections than these tubes with the pump attached to them. Two or three gallons of fluid can be thrown up in as many minutes.

After the stomach has been well emptied by these means, it will always be proper to give a cordial drink like that recommended in Recipe 27, p. 112.

Cattle that have been once blown are subject to a repetition of the accident. One of these drinks should be administered whenever they are turned into fresh and tempting pasture; they should be more carefully watched than others, and a cordial drink mingled with a physic drink given them as soon as they appear to be in the slightest degree blown.

CHAP. XXIII.

THE HOOSE, OR COUGH.

CATTLE are exceedingly subject to this disease, unconnected with, or not running on to "Inflammation of the Lungs," treated of in Chapter VII. p. 60. It is a very troublesome complaint, as well as very distressing to the beast, and oftener lays the foundation for consumption and death than any other malady to which these animals are exposed. It is, however, the farmer's own fault when this happens, and he has no one but himself to blame. He goes into the cow-house, or into the pasture, and he hears some of his cattle coughing, and that hardly and painfully; but, while they continue to chew the cud, and do not waste in flesh, or fall off in their milk, he thinks little about it, and suffers them to take their chance. After a while, he finds that they are getting off their food, and becoming thin, and are half dry, and then he begins to be alarmed, and sends for advice, or takes them in hand himself. He is now too late; the disease has fastened itself upon a vital part, and the constitution is undermined.

I will not say that if a farmer should happen to hear a beast cough, he should at once consider him to be ill, and bleed and physic him; but, if a few days afterwards he should hear him cough again, and if he can discover the least sign of illness about him, he will do wrong if he does not immediately adopt some medical treatment.

Cows turned out too soon, or in too cold a situation, young cattle, and calves, are most liable to the hoose. In some years it is epidemic, and destroys a great many cattle. In the winter of 1830, and in the spring of 1831, thousands of young cattle perished in every part of the country. Some of them were carefully examined after death, and the membrane lining the windpipe was found to be inflamed, and the inflammation extending down to, and involving all the small passages leading to the air cells of the lungs.

In a great many of them a very extraordinary circumstance was observed: the windpipe was nearly filled, and the small passages of the lungs were absolutely choked by myriads of little worms. These cattle had had their flanks particularly tucked up, and had stood and coughed with a violence that threatened every moment to burst some blood-vessel; and well they might cough thus violently, when the delicate and sensitive lining of the air tubes was incessantly irritated by the motion, if not by the bites of these worms. The origin of these worms no one has satisfactorily described. There is no doubt that there are innumerable little eggs of various animalculæ, too small to be seen by the unassisted eye, always floating in the air, and only waiting for some proper situation or nest, to be nursed into life. The proper nidus or nest of these animals is probably the mucus of the air-passages, and they are plentifully lodged upon it in the act of respiration.

The treatment of hoose is sufficiently simple. The animal should be removed to some more sheltered place. An airy, yet warm cow-house should, if convenient, be selected. Blood should be drawn in a quantity varying with the degree of fever, or the urgency of the cough: warm mashes should be given, with a little good hay, and the cough fever drink (No. 1, p. 54), either in the usual dose, or one-half, or three-fourths of the quantity, according to the size of the beast, or the violence of the complaint. Shelter, warmth, mashes, and sedative medicines are the only effectual means of relieving the animal, and they certainly are effectual if employed in time.

As for those aggravated cases in which the presence of these myriads of worms augments so sadly the sufferings of the beast, I scarcely know what to advise. The violent cough is an effort of nature to expel the parasites. Can we assist her in accomplishing that expulsion? There are certain medicines which afford us much relief when we have difficulty in expectorating a quantity of thick viscid phlegm. After a dose or two of liquorice or squills we find the cough considerably loosened, or, in other words, the phlegm is a great deal more fluid, and easily got rid of. The same effect, although not to such an extent, is produced in cattle, and a few, at least, of the worms are expelled. The following prescription may be tried with advantage :—

RECIPE (No. 40.)

Expectorant Drink.

TAKE—Liquorice root, two ounces ; bruise, and boil it in a quart of water until the fluid is reduced to a pint ; then gradually and carefully add—
Powdered squills, two drams ;
Powdered gum guiacum, one dram ;
Tincture of balsam of Tolu, half an ounce ;
Honey, two ounces :
Give it morning and night.

There is another way in which the worms may with greater certainty be got rid of. There are some substances which are immediately destructive to worms, when brought into contact with them. Some of these medicaments may be taken into the circulation of the animal with perfect safety to him, and probable death to the worms. Among those which most readily enter into the circulation after being swallowed is the oil or spirit of turpentine. The breath is very soon afterwards tainted with its smell, which shows that a portion of it has passed into the lungs. Therefore, when other means have failed, and the continuance of the violent cough renders it extremely probable that worms are in the air-passages, the following prescription may be resorted to:—

RECIPE (No. 41.)

Turpentine Drink for Worms.

TAKE—Oil of turpentine, two ounces;
Sweet spirit of nitre, one ounce;
Laudanum, half an ounce:
Mix, and give in a pint of gruel.

This may be repeated every morning without the slightest danger; and even when we are a little afraid to give it longer by the mouth, it may be thrown up in the form of an injection.

Before I quit the subject of hoose, I must repeat my caution against the use of spices and cordials for the cure of this disease. Hundreds of animals are yearly lost by this mode of treatment. As easily may a fire be put out by pouring oil upon it, as hoose, attended with fever (and that it is nine times out of ten), be subdued by the farrier's comfortable, or, in other words, highly stimulating, and almost intoxicating drink.

Should the case appear to be obstinate, the exhibition of half doses of physic every second or third day will often be useful, with the following drink, morning and night, on each of the intermediate days:—

RECIPE (No. 42.)

TAKE—Digitalis, one scruple;
Emetic tartar, half a dram;
Nitre, three drams;
Squill, one dram;
Opium, one scruple:
Mix, and give with a pint of gruel.

A seton in the dewlap should never be omitted; and if the disease seems to be degenerating into inflammation of the lungs, the treatment must be correspondingly active.

The termination of hoose, that is most to be feared, is consumption. That will be indicated when the discharge from the nose becomes purulent, or bloody, and the breath stinking, and the cough continuing to be violent, while the beast feeds badly, and the eyes begin to appear sunk in the head, and he rapidly loses flesh. The best remedy here, so far as both the owner and the animal are concerned, is the pole-axe of the butcher, for in the early part of the disease the meat is not at all injured, and may be honestly sold. If, however, it is wished that an attempt should be made to save the animal, the cough and fever drink, No. 1, p. 54, may be given daily; more attention should be paid to the warmth and comfort of the beast; and, if the weather is favourable, it should, after a while, be turned into a salt marsh, either entirely, or during the day.

CHAP. XXIV.

ULCERS ABOUT THE JOINTS.

In some low and damp parts of the country oxen are particularly liable to this complaint. Small hard tumours appear about the joints and legs, attended often with considerable swelling and tenderness of the neighbouring parts. The animal walks stiffly, and sometimes is decidedly lame. These little tumours, or knots, frequently run in lines, following the course of the veins. They, however, belong to the absorbents, which run in the same direction with the veins, and they bear no little resemblance, both in appearance and in actual character, to the farcy buds of the horse. Sometimes they continue in their hard state during several weeks; at other times they speedily begin to have matter in them, and burst, and ulcers are formed, which are very difficult to heal, and the matter from which corrodes and destroys the neighbouring parts.

The cause is, usually, exposure to cold, especially if the beast is young. Often, however, it is apparently constitutional, and now and then it seems to run a great deal in the breed.

As much local inflammation and general fever accompany the appearance of these tumours, it will always be proper to bleed and physic, and the affected part should be well fomented two or three times every day with a decoction of camomile flowers. The ulcers must be treated with apparent severity. They should be lightly touched with the lunar caustic, once in two or three days, and dressed with the following ointment:—

RECIPE (No. 43.)

Ointment for Ulcers about the Joints.

TAKE—Nitrated ointment of quicksilver, and
Yellow basilicon, equal parts:
Rub them well together with a spatula.

When the ulcers begin to look red and healthy, and discharge good matter, they may be dressed with the ointment (Recipe 7, p. 59.)

It will, however, often happen that the ulcers, if they remain small, will discharge a thin bloody matter instead of pus, and are not at all disposed to heal. In this case they should be cauterised with the budding iron used for the farcy buds of the horse, and then dressed with the ointment No. 7; or, if they are running together, and forming large sores, they should be daily washed with a very strong solution of blue vitriol, and dressed with the same ointment.

A drink, composed as follows, will generally be useful after the physic has ceased to act:—

RECIPE (No. 44.)

A Tonic Diuretic Drink.

TAKE—Common turpentine, half an ounce;
Ginger, two drams;
Gentian, two drams;
Tartrate of iron, one dram; rub them together with a little treacle, and then gradually add—
Spirit of nitrous ether, one ounce:
This should be given in gruel every day.

CHAP. XXV.

LOCKED JAW.

FORTUNATELY this is not a very frequent disease among cattle, but it is a very fatal one when it does occur. If the attendant is careful, he will observe the symptoms of this malady one or two or more days before it is thoroughly and incurably established. There will be a stiffness of gait in the beast, particularly wide walking behind, difficulty of turning, permanent cocking of the tail, except that it is interrupted, or accompanied by a tremulous motion. The animal can scarcely bend the neck to graze, or stands with the head protruding, and the ears strangely sticking out, in a somewhat backward direction. Rumination gradually ceases, or is performed slowly and painfully. At length the jaws become firmly closed, and the neck perfectly stiff. The eyes are in a manner fixed, and with some degree of swinting, and the expression of the countenance is peculiarly anxious. The breathing is more or less affected, and which is indicated by the working of the flanks.

The animal will linger on in this dreadful way for eight, or nine, or ten days, almost every muscle of the body being painfully cramped, and the poor creature unable to take a morsel of food, until at length it dies, exhausted by the violent contraction of the muscles, and by starvation.

The usual cause of locked jaw is some neglected or unobserved wound, particularly in the feet. Working oxen, therefore, are most subject to it. Several weeks sometimes pass between the infliction of the wound and the appearance of this disease. Working oxen that have been exposed to cold and wet, after being heated in drawing, have locked jaw. Occasionally, but I am not sure that this is perfectly accurate, locked jaw has been said to have been produced by eating some poisonous plant, particularly the cholchicum, the water-hemlock, or the yew; but in many, and probably the majority of instances, the cause is altogether unknown.

The treatment is indicated by the nature of the disease. It is a most violent action of the nerves of motion of a part or the whole of the frame. The most likely means to quiet this is the loss of blood, and that in a large quantity. Therefore, the ox should be bled as soon as the complaint is discovered, and bled until his pulse faulters, and he staggers, and threatens to fall. The bleeding will usually relax the muscles of the jaw to a certain degree, and for a little while; and advantage must be taken of this to give a strong physic drink.

RECIPE (No. 45.)

Strong Physic Drink for Locked Jaw.

TAKE—Barbadoes aloes, one ounce and a half;
The kernel of the croton nut, powdered, ten grains:
Dissolve them in as small a quantity as possible of boiling water, and give them when the liquid is sufficiently cool.

Generally the jaw will be now sufficiently relaxed to introduce the thin neck of a claret bottle into the mouth, or, if not, the mouth must be forced open a little with a vice. The best method, however, of giving medicine in this case, is by the assistance of Read's patent pump, the pipe of which, let the jaws be fixed as firmly as they will, can generally be introduced, close to, and immediately before the grinders.

The bowels having been opened, those medicines must be resorted to which have the readiest and most powerful effect in quieting the nervous system. These are, as it regards cattle, opium and camphor.

RECIPE (No. 46.)

TAKE—Camphor, one dram, rub it down with a little quantity of spirits of wine; to this add—
Powdered opium, one dram, and give them in a small quantity of thick gruel.

This medicine may be given three or four times every day, taking care that the bowels are kept open, either with aloes or Epsom salts.

The bleeding should be repeated on the second day if the animal is not a little relieved, and as much blood should be again taken as he can bear to lose.

The stable or cow-house should be warm, and the animal covered with two or three thick rugs. If considerable perspiration can be excited, the beast is almost sure to experience some relief.

While all this is done to lower the action of the nervous system, the strength of the beast must be supported. He will not, or rather he cannot eat; but he often looks very wistfully at his food. Let a good mash, a little at a time, and moister than usual, be placed before him, a portion of which he will try hard to suck up. If he manages this tolerably well he need not be forced with gruel or any other nutriment; but if his jaws are too firmly fixed for this, the small end of the pipe of Read's pump can probably be got in, and as much thick gruel pumped down as the attendant pleases; and when the poor animal has been hungry for two or three days through utter impossibility of eating, he will gladly submit to this operation, and almost offer himself for it. It will be almost labour in vain to endeavour to stimulate the skin, or to raise a blister. Two, three, or four setons in the dewlap, have been useful, and benefit has been derived from shaving the back along the whole course of the skin, and cauterising it severely with the common firing iron. If it should be found impracticable to administer either food or medicine by the mouth, they must be given as clysters. Double the quantity of the medicine must be given; but not too much gruel at a time, otherwise it will be returned. A quart will generally be as much as as will be retained, and the clyster may be repeated five or six times in the course of the day.

Should the progress of the disease have been rapid, and the symptoms violent; or should it be found to be impossible to give medicine by the mouth, or cause them to act by injection, the most prudent thing will be to have recourse to the butcher. The meat will not be in the slightest degree injured, for it is a disease that is rarely accompanied by any great degree of fever.

CHAP. XXVI.

POISONS.

In the early part of the spring, and before the different vegetables have attained their proper growth and smell, cattle are liable to be injured, and even destroyed, by eating poisonous plants; and especially when they are turned into fresh pasture. In some countries, and in some seasons, when particular plants have prevailed, a great many cattle have been lost, and it has appeared as if some epidemic disease was raging, until a botanist has discovered the true cause of the malady. It is a great pity that farmers and graziers are not sufficiently acquainted with botany to know the different plants, wholesome and poisonous, that are growing in their fields. It is a pleasing study, and would be an exceedingly useful one to them.

The plants that are the most dangerous are the different species of hemlock, and particularly the water-hemlock, the fox-glove, the drop-wort, and some of the species of crows-foot. These plants are not useful for any purpose whatever, and it is to be lamented that the farmer is not able to recognize them, and root them all up. Young calves and lambs, until they have added some experience to the guidance of instinct, are occasionally lost in very great numbers.

The yew is a deadly poison, and many cattle have been destroyed by it; but they seldom browse upon it. The mischief is, in the great majority of cases, done by the half dried clippings of some formal hedge-row, or fantastic tree. In this state cattle are very apt to eat great quantities of the leaves or shoots. Some have thought that cattle are poisoned by drinking from stagnant pools, full of venomous insects, and of every kind of decomposition from animal and vegetable substances. I doubt the truth of this; for the cow seems to be naturally one of the foulest drinkers among our domesticated quadrupeds. She will often choose the most horrible puddle in the straw-yard in preference to the clearest running stream. Nature would not have given her this propensity to foul and putrid drink if it was prejudicial to her.

The symptoms of empoisonment vary with the plant that has been devoured. In general the animal moans sadly, as if it was in dreadful pain; the body is much swelled, and the beast either stands stupid, or tumbles about from giddiness, or is violently convulsed. After eating the yew-clippings cattle are often perfectly delirious.

It is plain that there can be no case in which more speedy and decisive measures are needed; and yet after all very little can be done, except that useful instrument, and far too little known, Read's patent pump, is at hand. The pipe can be introduced into the paunch, and the extricated gas which causes the swelling will escape. Then a quantity of warm water may be thrown into the stomach, sufficient to cause sickness, and thus get rid of a part, at least, of the offending matter. Then, by introducing the pipe only a part of the way down the gullet, a physic drink may be thrown in, which will thus pass on to the fourth stomach, and cause speedy purging. The aloes and croton, No. 45, p. 166, will be the most effectual here; beyond this I know not what can be done, except to bleed moderately, to give drinks of vinegar and water, not exceeding half a pint of vinegar at a time, and to keep up the purging by small doses of the aperient medicine. When the poison seems to be pretty well evacuated, a cordial drink will be beneficial in giving tone to the stomach, and the Recipe 27, p. 112, will be as good as can be given.

Ranking under the general term of poisons, we may mention the bites of venomous reptiles. Our country fortunately knows but one that is dangerous, and that is the viper, or adder; it is very rarely, however, that cattle suffer from its sting. They are generally stung about the head or feet, for either in the act of browsing, or as they wander over the pasture, they are most likely to disturb these reptiles. Cattle bitten in the tongue almost invariably die. They are suffocated by the rapid swelling of the tongue which takes place. The udder has occasionally been stung, but the supposed bites on the teats are, oftener than otherwise, the effect of garget.

The country remedy is not a bad one, *viz.*, to rub the part well with a bruised onion. Some follow this up by cramming another onion down the throat. A better application is the following:—

RECIPE (No. 48.)

TAKE—Hartshorn, and
Olive oil, equal quantities.

Shake them well together, and rub the wound and the neighbouring parts well with the liniment morning and night.

A quart of olive oil should also be given to the animal, mixed with an ounce of hartshorn. Oil of turpentine may be used when hartshorn cannot be procured.

Hornets, wasps, and bees have in some cases produced much swelling, and temporary pain and inconvenience. If the part is well washed with vinegar the swelling and pain will subside.

Leech-bites may be mentioned here. While the animal has been drinking from some stagnant pool, a leach has fastened itself on the muzzle, and then crept up the nostril, and biting here and there has caused an hæmorrhage that continued for a considerable time. If the creature can be seen, or it is in a manner certain that it has insinuated itself into the nostril, a little strong salt and water should be injected up the nostril, which will immediately dislodge the intruder.

CHAP. XXVII.

WOUNDS.

FROM being gored by their companions, and from the brutal violence of those who look after them, cattle are often exposed to wounds. The treatment of them is generally simple enough, except in a joint, or the neighbourhood of a joint.

The first thing is to clean them from all dirt and gravel, which would cause irritation, and prevent the healing of the part. A good fomentation with warm water will effect this, and at the same time will help to abate any inflammation which may probably arise.

Next is to be considered the state of the wound. Is it a lacerated or punctured one? If it is a lacerated wound we must try how neatly we can bring the divided parts together. If there are any portions so torn as to prevent us from doing this completely, they should be removed with a knife or strong pair of scissors. Then, when the edges are brought well together, they may be retained by passing a needle and strong waxed twine deeply through them, making two or three, or more stitches at the distance of half an inch from each other. A surgeon's crooked needle, or a glover's large triangularly pointed needle, will be necessary for this purpose. A little dry soft clean tow should then be placed over the wound, and the whole covered by a bandage closely, but not too tightly, applied. Let none of the cruel farrier's tents, or pledgets of tow, be introduced; the intervals between the stitches will be quite sufficient to permit the escape of any matter that may be formed. The wound should not be opened after this for two days.

When it is opened let none of the hot torturing applications of the farrier be used. If it looks tolerably healthy, and is going on well, it may be dressed with tincture of myrrh and aloes, or with the Healing Ointment, No. 7, p. 59, or with both; a pledget of tow soaked in the tincture being put immediately upon the wound, and more tow with the ointment spread upon it, placed over this.

If proud flesh should begin to spring, the wound may be first washed with a strong solution of blue vitriol, and then dressed with the tincture; or if the discharge is very offensive, the wound may be well washed with a solution of chloride of lime, mingled with eight times the quantity of water, and then dressed with the tincture. It is high time for all the disgraceful torturing applications of the farrier and cowleech to be discarded, especially as nature is much kinder to these animals than she is to us, and wounds that would in the human being puzzle the surgeon, heal readily in cattle almost without any application.

If it is a punctured wound its direction and depth must be carefully ascertained. Fomentations of marsh-mallows, or poppy-heads boiled in water, should be applied for a few days to abate inflammation, and the tincture of aloes and myrrh should be injected into the wound morning and night, the injured part being covered if the flies are troublesome, but otherwise left open. If the wound runs downwards and the matter cannot escape, but collects at the bottom, and seems to be spreading, a seton should be passed into the original orifice, and passed down in the direction of the sinus, or pipe, and then brought out. There is never occasion for the introduction of lint into these wounds; if they are well syringed with the tincture to the very bottom, and a seton passed through the sinus, should one happen to be formed, they will all do very well.

From the yoke being too heavy, or not fitting the neck, the shoulders of oxen will sometimes get sadly wrung, and deep ulcers will be produced, resembling fistulous withers in the horse. These ulcers are very troublesome to deal with. The secret, however, of dealing with them is to pass a seton through the very bottom of them, in order that the matter may flow freely out; then, in the majority of cases, the ulcer will readily heal, or if it should not, the diabolical scalding mixtures of the farrier are never wanted. If I allowed any scalding mixture it would be boiling tar, because tar boils at a very low degree of temperature. The surface of the wound would be sufficiently stimulated, and the life of the part would not be destroyed; but he who pours in his boiling oil, or his corrosive sublimate, deserves never more to possess, or to be permitted medically to treat a beast. In obstinate cases diluted nitric acid (one part of nitric acid, and two of water), may be applied over the surface of the ulcer, with a pencil or sponge.

When a tumour is forming on the shoulder from the pressure of the collar, every attempt should be made to disperse it. A saturated solution of common salt will often be useful, or sal ammoniac dissolved in eight times its weight of water; but the best discutient application is the following:

RECIPE (No. 49.)

Discutient Lotion.

TAKE—Bay salt, four ounces;
Vinegar, one pint;
Water, a quart;
Oil of origanum, a dram.

Add the oil to the salt first, rub them well down with a little water, then gradually add the rest of the water and the vinegar.

The part should not only be wetted with this embrocation, but gently yet well rubbed with it.

Should the swelling still increase, and, on feeling it, matter should evidently be formed, the sooner the tumour is opened the better, and the best way to open it is to pass a seton from the top through the lowest part of it.

Oxen are very apt to be wounded in the feet. If it is discovered at first, all that will be necessary will be to touch the part lightly with the butyr of antimony. The application of the caustic is absolutely necessary here, but there is no need to apply it with the severity used by some, so as to corrode the parts to the very bone.

If the wound is extensive, and accompanied by much swelling, heat, and pain, and especially if the beast should begin to lose its appetite, and to heave at the flanks, it will be prudent both to physic and to bleed.

If much contusion or bruise attends the wound, and which is very likely to happen when cattle are gadding about and breaking out of their pastures in summer, and especially when strange beasts are intermixed, the previous fomentation will be more than usually necessary to prevent inflammation, and to disperse or favour the escape of the effused blood. The fomentations should be continued for half an hour at each time, and three or four times in the day. The flannels should be wrung out of the water, or rather applied dripping wet, and as hot as the hand can bear them.

If the wound penetrates the cavity of the chest, as it sometimes will when one beast gores another, it will be necessary to bring the parts more accurately together, and to confine them by closer stitches, then a piece of adhesive plaister should be placed over the wound, and secured by the application of proper rollers or bandages. If the air is suffered to pass in and out of the wound for any considerable time, the edges of will be indisposed to unite together, and to heal, and the pleura or lining of the chest will probably become inflamed by the unnatural presence of air in the cavity of the chest.

If the belly should be wounded, and a portion of the bowels should protrude, it will be proper to calculate the probability of being able to return them into their proper situation, and healing the wound; for in many of these cases the best thing the farmer can do, is to send the animal at once to the butcher. Should a cure be attempted, all dirt and clotted blood should be most carefully removed from the protruded intestine with a sponge and warm water. It must then very carefully be returned into the belly, and the edges of the wound brought together and secured by very close stitches. After that, rollers or bandages must be passed round the belly, which being removed only while the wound is dressed, must remain until a cure is completed, and for a few days afterwards.

In all these cases a veterinary surgeon should be consulted. He alone is able to give an accurate opinion as to the probability of a cure, and to guard against a thousand accidents and annoyances which are likely to occur in the treatment of such a case.

Many persons are frightened when they see the profuse bleeding which sometimes takes place from deep or lacerated wounds. Except some very large arterial trunk is divided, there is little or no danger of the animal bleeding to death: when a certain quantity of blood is lost the stream will flow slowly, and a coagulum, or clot of blood, will be formed in the vessel, and arrest the hæmorrhage. Sufficient blood, however, may be lost, to interfere very materially with the condition of the beast, and to leave considerable and lasting weakness behind. We are therefore anxious to stop the bleeding as soon as we can.

Where the situation will admit of it, a dossil of lint, placed upon or in the wound, and secured by a firm bandage, will often be effectual. If the vessel be but partly closed by the pressure of the lint, yet that may be sufficient to permit the coagulation of the blood, and the consequent stoppage of the stream.

The next preferable way of proceeding is to endeavour to pass a ligature round the bleeding vessel. This is often practicable by means of any hooked instrument, by which it may be drawn a little from its situation, and some waxed silk or twine passed round it. Sometimes it may be laid hold of with a pair of forceps or small pincers, and so secured; or, should neither of these methods be practicable, a crooked or glover's needle, armed with waxed silk, may be plunged into the flesh or cellular membrane in two or three places around the wound, and when the silk is tightened the vein or artery will probably be compressed and closed. The hot iron is sometimes applied, but usually a great deal too hot, so as to destroy the life of the part, instead of simply searing it, and thus causing renewed hæmorrhage when the dead part is thrown off. As for styptic powders or lotions, they appe to have little or no effect in stopping profuse bleeding in cattle.

The bleeding is generally stopped with most difficulty, when the horn is broken off in some of the fights among the cattle. The bone of the horn is full of blood-vessels, and it is only by plaister after plaister of tar, that a compress is made all round, through which the blood cannot penetrate. These plaisters should not be removed for many days, otherwise the bleeding from such a vascular part will return.

But of all the wounds to which cattle are occasionally exposed the most dangerous are those about the joints, and especially when the joint itself is penetrated. The ox is not so subject to this as the horse; but the fetlock and the knee joints are occasionally deeply wounded, and the joint laid open, either by falling, or being brutally wounded by a fork.

Here, as in all other wounds, the first thing to be done is carefully to wash away all dirt and gravel. The probe must then be introduced, and the depth to which it will penetrate, and more particularly the grating sound which will be heard when it comes in contact with the bone, will generally determine whether the joint has been injured. Should, however, any doubt remain about it, a poultice should be applied. This will not only abate, or prevent inflammation, but if the joint has been penetrated, the synovia, or joint oil, will escape, and appear upon the poultice in the form of a glairy, yellowish fluid. Then there is no doubt as to the course to be pursued. The flow of this must be stopped, and that immediately. It is placed there to be interposed between the ends of the bones, and to prevent them rubbing against each other, and becoming irritated or inflamed. The membrane with which the heads of the bones are covered is in the highest degree sensitive, and with the slightest injury takes an inflammation, attended by the extremest torture. There is no agony equal to that produced by an opened joint. Then we must keep in the interposed joint oil, and prevent this dreadful friction between the membranes.

There are two ways of accomplishing this. That which seems to be the most humane is to place a small compress on the part, exactly covering the wound; to bind it down tight, and not to remove it for many days. Yet it has often happened that when the compress has at length been taken off, the joint-oil has flowed as quickly as before; therefore, I believe we must go back to the old method, and apply the hot iron to the wound. The iron should be run lightly across it in various directions, when so much inflammation and swelling will be usually produced, as fairly to block up the orifice, and to block it up with that which soon becomes organized, or converted into the same substance as that on which it is plac and so the opening into the joint is securely and for ever stopped. Or should the joint-oil afterwards flow a little again, a re-application of the iron will put an end to the business.

The iron being applied, the part may be poulticed to ease the pain, and the part may be treated as a common wound.

Should, however, the wound be large, and the opening into the joint large too, it will be prudent to destroy the animal at once, especially if it is in tolerable condition. A dead horse is worth comparatively little, but a dead ox, fairly slaughtered, will produce its full value. Therefore, the possibility of a cure not being effected, or of the animal materially losing condition while the cure is attempted to be performed, should always be taken into account; and in cases where the meat is not injured it should be inquired whether the expence and trouble, and the sufferings of the animal, should not be at once terminated by the butcher.

These are the only means that should be used. When the farrier or the cow-leech wants to inject his corrosive sublimate, or his oil of vitriol, let no consideration tempt the farmer to comply. It is cruel work, and it does not succeed in one case out of ten. In every joint case it will be prudent to bleed, and administer a dose of physic, and use all proper means to prevent or abate fever.

CHAP. XXVIII.

STRAINS AND BRUISES.

THE ox is not so subject as the horse to strains, for his work is slower, and usually less laborious. The horse is seldom strained at slow and steady work, and that only is generally exacted from the ox. The principal cause of strain in these animals arises from their contests with, or their riding or romping each other. In recent strains, attended with lameness and heat, the following is one of the best embrocations that can be used:—

RECIPE (No. 50.)

Embrocation for Strains.

TAKE—Bay salt, four ounces;
Oil of origanum, one dram; rub them well together, until the salt is reduced to a powder, then add—
Vinegar, half a pint;
Spirits of wine, two ounces;
Water, a quart.

Bathe the part frequently with this embrocation. There cannot be a better application for strains or bruises in the horse, or even in the human being. For *bruises* in cattle, however extensive, if the skin is not broken, this is one of the best embrocations that can be applied. When the heat and tenderness have somewhat subsided, and only weakness of the part remains, the Rheumatic Embrocation (Recipe) No. 6, p. 59, will be serviceable.

Frequent fomentations with warm water should precede the use of these embrocations. In bad cases it may be prudent to give a dose of physic, or even to bleed.

For very deeply seated strains a more powerful application may be necessary. Then use the following:—

RECIPE (No. 51.)

Strongest Embrocation for Strains.

Take—Spirit of turpentine, half a pint;
Oil of origanum, half an ounce;
Olive oil, a pint and a half;
Cantharides, one ounce:

Mix them together, shake them often, and keep them in a bottle for use.

This should be well rubbed in morning and night. It is not intended absolutely to blister the animal, and should it cause much redness or tenderness, it may be lowered with an equal quantity of olive oil.

After all a considerable degree of weakness and lameness will occasionally remain, and especially about the hips and loins. A strengthening plaister will be very useful here. It is best applied in the form of a charge.

RECIPE (No. 52.)

Charge for Old Strains or Lameness.

Take—Burgundy pitch, four ounces;
Common pitch, four ounces;
Yellow wax, two ounces;
Barbadoes tar, six ounces:

Melt them together in a ladle, and apply the mixture to the parts when thoroughly warm and liquid.

A little short tow is then placed over the part, and the animal turned out. It acts as a support to the part, and as a permanent bandage. It can never do harm, and many an old strain, or lameness, or rheumatic affection, has been effectually removed by it. This should remain on the part two or three months in order to ensure its full success.

CHAP. XXIX.

CANCEROUS ULCERS.

There seems to be a natural disposition in cattle to the formation of tumours on various parts of the body. They are mostly found in the neighbourhood of joints, and generally either hanging loose, or slightly adhesive to the parts beneath. They sometimes grow to an excessive size. In some cases they appear to be constitutional, for many of them appear on different parts. They do not seem to give much pain to the animal, and occasionally go on month after month without being of any serious inconvenience; they then suddenly break, and a malignant ulcer ensues, which speedily degenerates into a cancerous one.

The tumours are sometimes smaller, and fixed to the parts beneath by a broad base. They are chiefly found about the face, on the cheeks, or under the eye-lids, or in the channel between the jaws. These are more likely to break than the others, and when they break are far less manageable. The fluid that is discharged from them is thin and excoriating, and the wounds are covered with proud flesh, springing again as quickly as it is removed. If they are attacked before they break they will generally be got rid of.

RECIPE (No. 53.)

Ointment for Cancerous Tumours.

TAKE—Hydriodate of potash, one ounce;
Lard, eight ounces:

Rub them well together, and having cut or shaved the hair about the tumour, rub in a proportion of ointment as large as a chestnut morning and night.

At the same time a dram of the tincture of iodine may be given in a little gruel morning and night, at or soon after the time of feeding. The tumours will frequently disappear altogether, but the ointment and tincture must be used for at least a month before any decisive good can be expected.

If the tumours at the end of that time should not be evidently diminishing, the veterinary surgeon (for he should be consulted here) will begin to think about removing them with the knife. They are seldom fed by any very considerable vessel, and may usually be taken away without the slightest danger. It will, however, even then be prudent to give the tincture of iodine for three weeks or a month, to prevent the constitutional tendency to a return of the tumours.

It will in the majority of cases be useless to attempt to heal them when broken. Strong ointments, and caustics of all kinds have been used, and the ulcer has daily spread and become deeper and deeper, until it was necessary to destroy the animal. If any thing is attempted in the way of healing the ulcers, the wound should be washed before every dressing with the tincture of iodine, lowered with four times its weight of water, and the Healing Cleansing Ointment (Recipe 7, p. 59) be daily applied.

These tumours are often very troublesome to treat, and the preferable way will generally be to remove them with the knife, except others should be found in the neighbourhood, or in some distant part, in which case the removal of the principal tumour would only hasten the growth of the others. Mercurial ointment will have no effect on these tumours, except to irritate them, and cause them to grow faster, and sometimes it will salivate and seriously injure the beast.

CHAP. XXX.

THE FOUL IN THE FOOT.

THIS is also a troublesome and obstinate disease. It consists of ulcers of the foot, usually about the coronet, running under the horn, and causing more or less separation of it, with intense pain and lameness. It is produced by cattle being pastured too long on wet and poachy land, or their being driven too far over a hard and flinty road. It generally first appears between the claws in the form of a crack, extending from the coronet down the foot, with considerable inflammation, and the discharge of a stinking matter or pus. At other times a little swelling appears on the coronet between the hair and hoof, which breaks, and likewise discharges much stinking matter, and on being examined with a probe, a sinus, or pipe, will be discovered descending from the coronet down the foot, and under the horn. The pain is often so great that the animal altogether refuses his food, and becomes as thin as a skeleton. The being pricked in shoeing is not an unfrequent cause of foul in the foot, especially if the ox is hardly worked afterwards, or turned on damp and boggy grounds. It very much resembles quittor in the horse, and must be treated in the same way.

The first thing to be done is to examine the wound carefully, and see how far it extends under the horn. If there is little or no underrunning the case may be easily and successfully treated. The country practice is to clean the part carefully, and then take a small cart rope, or a pair of cow-hopples, and chafe them backward and forward between the claws for four or five minutes, and afterwards to dress the sore with a little butyr of antimony, and turn the beast into a dry pasture.

I have no objection to this except that it seems to be a very rough way of going to work. All that is necessary is, after cleaning the part well, to cut away all loose or separated horn, and all proud flesh, and then slightly apply the butyr to the sore. There will not be much difficulty if the case is taken in time, and the ragged and loose horn very carefully all pared away, and then the butyr applied, and the sore kept dry.

Should, however, the pasterns swell, and be hot and tender, as they will do if the case has been neglected, or any gravel has insinuated itself between the horn and the foot, the wound must be more carefully examined, the smallest sinus must be laid open, and the pipe exposed and cleaned out to the very bottom. A poultice of linseed meal should then be applied, and changed morning and night until the swelling and inflammation have subsided, when the caustic may be again employed, but very lightly at first.

In a few cases the foul in the foot cannot be traced to any external injury, but seems to be the result of natural foulness of the habit. It then resembles grease in the horse, and must be similarly treated. A brisk dose of physic should be given, and when that has ceased to operate, the Diuretic Drink (No. 24, p. 96) every morning. The sores, if foul and hot, should be cleaned and cooled by poulticing for a few days, and then the feet may be washed morning and night with a tolerably strong solution of alum in water. A moderate bleeding will be serviceable in such a case. It should not be forgotten that this disease is highly infectious, and that the lame beast should be speedily removed from his companions.

CHAP. XXXI.

TO DRY A COW OF HER MILK.—ANGLE BERRIES.

It is often necessary to dry up the milk when cows are wanted speedily to fatten, and this is now and then found to be a difficult matter, especially with large and gross beasts. If the flow of milk is suffered to continue it may overload the bag, and produce inflammation of the bag, or garget, or general fever, or inflammation of the lungs, or foul in the foot.

The best time to dry the cows is early in the spring, when they eat dry meat. A good dose of physic, followed by mild astringent drinks, will usually settle the business, especially if she is moderately bled before the physic is given. Alum in the form of whey, or dissolved in water, will be the most effectual, as well as the safest astringent. Six drams will be the medium dose. The cow may be milked clean when the astringent is given, and then turned on some dry upland pasture.

Two days afterwards she should be examined, and if the udder is not overloaded, nor hard nor hot, the milking may be discontinued; but if the udder is hard and full, and especially if it is hot, she should be fetched home, cleanly milked, and another astringent drink given. The third drink, if it is necessary to give one, should be an aperient one, and after that the Diuretic Drink (No. 24, p. 96) every second day.

The milking should only be resorted to if the state of the udder absolutely requires it, for every act of milking is but encouraging the secretion of milk.

ANGLE BERRIES.

These are little warty tumours growing on various parts of the skin. They are unpleasant to the eye, and they sometimes become very sore. They are a sad nuisance about the teats, and often render the cow very difficult to milk. The easiest and surest way to remove them is to tie a piece of waxed silk firmly round the base of each; to tighten it every day, and then in a short time the tumour will drop off, and rarely grow again. There will be no bleeding, and the neighbouring parts will not be inoculated.

This will prevent the same angle berry from growing again, but others may sprout wherever the blood has flowed; it will seldom be necessary to cast the ox in order to remove the berries in this way.

If they are early attended to, and before they have reached any considerable size, they will gradually disappear when they are daily touched with the nitrate of silver, either in substance, or in the form of a strong solution. The strong nitrous acid will answer the same purpose. When there is an inveterate disposition to the growth of these berries, the iodine may be given, as already directed, with every prospect of success.

CHAP. XXXII.

THE MANGE.

This is a troublesome and a disgraceful disease. It argues bad management in some way or other. An occasional cause is over feeding, especially with hot stimulant food A more frequent one is starvation in the winter, by which the animal is so much debilitated that he cannot support the change of diet when the flush of grass comes on, and nature, overloaded, relieves herself by this eruption on the skin. A third cause is filth, and in the cow-houses of many little farmers, it is not an unfrequent one. The last cause that I shall mention is contagion: mange is highly infectious, and if it gets into a dairy will often run through all the cows.

When there is not much eruption the disease is recognised by the hide-bound appearance of the animal; the dryness and harshness of the hair; its readily coming off; the beast continually rubbing himself; and a white scurfiness, but not often much scabbiness on various parts.

Medicine alone will be of no avail here. The beast must be dressed. There is no occasion to use any thing poisonous for this purpose, as cow-leeches are too much in the habit of doing. The corrosive sublimate and hellebore and tobacco should never be suffered in the dairy. They have destroyed hundreds of cattle.

The most effectual application is an ointment of which sulphur is the principal ingredient. Some mercurial ointment, however, must be added, but in no great quantity, for cattle will lick themselves, and salivation may ensue. There is nothing so injurious to the milk, or to the fattening of the beast as salivation, even in a slight degree.

RECIPE (No. 55.)

Mange Ointment.

TAKE—Flower of sulphur, a pound;
Strong mercurial ointment, two ounces;
Common turpentine, half a pound;
Lard, a pound and a half:

Melt the turpentine and the lard together, and well stir in the sulphur when they begin to cool.

This should be well rubbed in with the hand daily, wherever there is mange, and the hair should be carefully separated where the affected part is covered by it. No possible danger can happen from the prolonged use of this ointment if the animal is not exposed to severe cold.

Alterative medicine will materially assist the cure. The following may be given without injury to the milk, and without any precaution being needed.

RECIPE (No. 56.)

Alterative Drink.

TAKE—Flower of sulphur, two ounces;
Black sulphuret of antimony, one ounce;
Æthiop's mineral, half an ounce;
Nitre, two ounces:

Mix, and divide into four powders, give one every second morning in a little gruel. Turning into a salt marsh will be an excellent auxiliary.

Connected with mange, generally accompanying it, and often producing it, are lice. The presence of these argues extreme negligence, and is an absolute disgrace to the farmer. They rapidly spread from cow to cow; and although they are never originally bred in the skin of a diseased animal, yet in one that has been half starved or mangy, and whose coat clings to the skin, and will not come off when nature usually sheds it, these vermin find too favourable a shelter. They are both the consequence and the cause of mange, and other affections of the skin. Myriads of them are sometimes found on the poor beast, teazing it almost to death.

The mange ointment above recommended will often be effectual in destroying them, or should it not be sufficiently powerful, a weaker kind of mercurial ointment may be applied.

RECIPE (No. 57.)

Ointment for Vermin.

TAKE—Strong mercurial ointment, one ounce;
Lard, seven ounces:

Mix them well together, and rub the ointment well on wherever the lice appear.

Some prefer a lotion; the best is—

RECIPE (No. 58.)

Lotion for Vermin.

TAKE—Corrosive sublimate, two drams; rub it down in two ounces of spirit of wine, and add a pint of water.

This is strong enough to kill the vermin, but cannot possibly injure the beast. An ointment, however, is best, for it can be more thoroughly rubbed among the hair, and into every lurking place which the vermin may occupy. A portion of the liquid is often lost in the act of applying it. The ointment or the lotion should be used daily, when three or four dressings will generally remove the nuisance.

Scotch snuff has been dusted on the beast with evident good effect; the animalculæ have been thinned, but not extirpated. The snuff cannot possibly reach half of them.

While the lice are attacked, the condition of the animal should, if possible, be improved. Poverty and bad condition are sad encouragers of these pests. The alterative drink just recommended may be advantageously combined with tonics.

RECIPE (No. 59.)

Alterative Tonic Drink.

TAKE—Flower of sulphur, four ounces;
Black sulphuret of antimony, one ounce;
Æthiop's mineral, half an ounce;
Nitre, two ounces;
Powdered gentian, two ounces;
Powdered ginger, one ounce:
Mix and divide in six powders, one to be given daily.

WARBLES may also be here considered. The breeze or gad-fly, or ox-fly, appears about the end of summer, and is a sad annoyance to the ox. At the very hum of the insect the cattle will gallop distractedly over the field, and sometimes do themselves serious injury. When the fly has the opportunity of alighting on the beast, he chooses the back or the loins, and, piercing the skin, deposits an egg under it. Some venom is also distilled into the wound, for a tumour is shortly afterwards formed, varying from the size of a hazel nut to that of an egg. It is a kind of abscess, for it speedily bursts, and leaves a little hole on the top of it for the grub which is now hatched, to breathe, and where he lives on the fatty matter which he finds in this curious abode.

These warbles are often a sad nuisance to the animal. He licks them when he can get at them, and rubs himself violently on any thing within his reach.

Country people sometimes get rid of them by compressing them between the finger and thumb, and forcing the maggot out. Others, with more certain effect, either pull off the scab around the mouth of the tumour, or open it with a lancet or penknife, and then pour in a few drops of spirit of turpentine.

CHAP. XXXIII.

TO PRODUCE BULLING IN THE COW, AND TREATMENT OF BULL-BURNT.

It sometimes happens that the cow will not stand to the bull at the time that the farmer wishes, so that either the calf is dropped a month or two after the most convenient and profitable time, or the most valuable season for making butter and cheese is lost. Some are thus backward because they have been previously starved; a week or fortnight's better keep will usually effect the desired purpose. Indeed, if the animal has been well kept, and is in good health, there will be little trouble about the matter.

Many recipes have been given by various authors to hasten the period of the cow being in season. The most effectual thing that I know is to give the cow that is wanted to take the bull, a quart of milk immediately after it has been drawn from a cow that is in season. Two or three good cordial drinks, such as that recommended Recipe 27, p. 112, may be serviceable. A few malt mashes, oats, carrots, &c., may likewise be given. I would earnestly advise the farmer never to have recourse to cantharides. It is a dangerously stimulating medicine; some cows have had suppression of urine quickly following the exhibition of it, and others have been lost.

On the other hand, cows should not be too fat at this time, because they will frequently then not stand the bulling. A fat cow should have a dose or two of physic and be bled; a lean cow requires better keep.

The sheath and penis of the bull occasionally become swollen and tender, and full of little ulcers, with fœtid ichorous discharge. The animal can seldom be managed unless he is thrown, when the yard should be drawn out, and all the sore places bathed with the following lotion:—

RECIPE (No. 60.)

Lotion for Bull-burnt.

TAKE—Goulard's extract, one ounce;
Spirit of wine, two ounces;
Water, half a pint.—Mix.

A few applications of this will give speedy relief, and heal the sores.

The shape of the cow will sometimes inflame and swell, accompanied with considerable pain at the time of staling, and a thin ichorous discharge. The part should be washed with this lotion, or a little of it injected up the shape with a syringe.

CHAP. XXXIV.

THE COW-POX.

THIS disease used to be confounded with sore teats generally until the immortal Jenner discovered its preservative power against small-pox. Other scientific men have since proved that it is identical with small-pox,—that it is, in fact, the small-pox of the cow.

It appears under the form of pustules or vesicles on the teats, which are easily broken in milking, and which, left alone, break of themselves, and discharge a thin, unhealthy, fluid. The pustules are surrounded by a broad circle of inflammation, and if neglected, or roughly handled, occasionally run into ulcers, very foul, and difficult to heal.

At the time of, or a little before the appearance of the pustules, the animal droops, refuses to feed, ceases to ruminate, and labours under considerable fever. The eyes are heavy and dull; the cow moans and wanders about by herself, and her milk materially lessens, and at length is almost suspended.

It will rarely be prudent to bleed, but the bowels should be fairly opened, and the fever drink given once or twice in the day, according to the apparent degree of fever. The teats should be frequently washed with warm water, and the following lotion applied morning and night.

RECIPE (No. 61.)

Lotion for Cow-pox.

TAKE—Sal ammoniac, a quarter of an ounce;
White wine vinegar, half a pint;
Camphorate spirit of wine, two ounces;
Goulard's extract, an ounce:
Mix, and keep them in a bottle for use.

If the ulcers become very foul, and difficult to heal, they must be treated in the way recommended for garget.

It is well known that these eruptions give a similar disease to the milker. Pustules appear about the joints of the hand, and the ends of the fingers; and there is sometimes considerable fever, pain in the head, and limbs, and loins, shivering, vomiting, and a quickened pulse. The pustules burst in three or four days, and sometimes become troublesome sores difficult to heal, and if unfortunately the patient should have rubbed his cheek or his lips with the diseased hand, the ulcers will appear there also.

It was the observation that persons who had had this disease of the cow were usually exempt from small-pox, which led to the most important discovery in medicine that has been made in modern times.

There is another eruption on the teat of the cow that bears no inconsiderable resemblance to the true cow-pox, and that has been confounded with it. The pustules are smaller; they are not so round, nor so deep; nor have they the blue colour of the others, and they contain pus or matter from the very first. They will readily yield to the ointment for sore teats, recommended in Recipe 25, p. 98.

CHAP. XXXV.

CLUE-BOUND.—FARDEL-BOUND.

These are different terms for costiveness, to which cattle are often subject, and especially in the beginning of almost all inflammatory complaints. The dung gets more tenacious and harder, and is forced away in very small quantities, through or by the side of other excrement that remains in the bowels. If this is not the companion of other diseases, there is at least a great deal of fever accompanying it, and if it is long neglected the animal is often lost. Bleeding will be very useful here, not only as lowering the fever, but disposing the purgative medicine to act more speedily. After bleeding, the bowels should be attacked in good earnest. The physic drinks already recommended should be given,—at first, the mild one (No. 2, p. 55.) If that, repeated after an interval of six hours, is not successful, the stronger dose (No. 48, p. 166) should be tried; and if that also fails, a pound of common salt should be administered, and repeated four hours afterwards. This will seldom deceive in extreme cases, although from its irritating the bowels a little too much it is not a purgative to be recommended in ordinary cases.

The action of the purgatives will be hastened, and generally secured, by the use of injections. Here Read's patent pump will be conveniently employed. Half a pailful of warm water, in which Epsom salt or common salt has been dissolved, may be thrown up every two or three hours.

After the obstruction has been once overcome, the continued exhibition of mild purgatives will be prudent, for the costiveness is too apt to return. The Sulphur Purging Drink (No. 4, p. 58) will be the best medicine for this purpose. The food should be mashes principally, or young succulent grass.

CHAP. XXXVI.

RABIES.—HYDROPHOBIA.

This dreadful disease is produced by the bite of a rabid or mad dog. The time that may elapse between the bite and the appearance of the malady varies from three weeks to three or four months.

The symptoms of its approach are dulness; loss of appetite; the eyes are anxious, protruding, and red; the animal frequently and pitifully lows; it is continually voiding its dung or its urine. Saliva drivels plentifully from the mouth, but after a day or two the discharge dries up, and is succeeded by thirst almost insatiable; *there is no hydrophobia or dread of water at any time.* Presently weakness of the loins and staggering appear; these are succeeded by palsy of the hind limbs, and the animal lingers six or seven days and dies.

In some cases he is dreadfully ferocious; he runs furiously at every object, stands across the path bellowing and tearing up the ground, and violently attacks and gores his companions.

There is no cure; the most prudent thing is to destroy the animal as soon as the disease is sufficiently plain. Care should be taken that the saliva is not received on a wound or abraded part, for it has given the disease to other animals, and a wound on which it has fallen should immediately have the lunar caustic applied to it.

When a mad dog has been known to bite a cow, there is the possibility of her escape, for her hide is thick, and the hair is thick too, and the skin may not be penetrated, or the tooth may have been cleaned in passing through the hair. She should be most carefully examined, and especially about the part on which she was seized by the dog, and if the minutest scratch can be found, the hair must be cut off round it, and the lunar caustic applied. That being done effectually, and every bite being discovered and operated on, the animal is safe; but it is possible, or rather it is too probable, that every bite will not be discovered, considering how thickly the skin is covered by hair. It is, therefore, the safest course, if the beast is in tolerable condition, to sell it at once to the butcher, for it will not be fit for the shambles if rabies has once appeared. Medicine would be perfectly thrown away in these cases. There is no cure, and no prevention but the destruction of the part.

CHAP. XXXVII.

THE DISEASES INCIDENT TO YOUNG CALVES.

When the calf is dropped, proper care should be taken of the cow in providing her with a comfortable place to lie down; she should also be suffered freely to lick her calf, for this will not only make her fond of it, but the young animal will be thoroughly cleaned, and raised much sooner than it otherwise would.

It is usual to take away a quart of the first milk, called *the beastings*, before the calf is allowed to suck. After this it may be allowed access to the cow, but regulated by the plan of suckling or bringing up on which the grazier may determine. Generally the calf should remain with the mother at least a week; for before that time milk is not good for the purposes of the dairy.

The mother's first milk is of an aperient quality, and sufficiently so to cleanse the bowels of the calf from the black sticky substance which they co when first dropped. If this should not be effected, a little opening medicine will be necessary.

RECIPE (No. 62.)

TAKE—Epsom salts, from one to two ounces, according to the size and age of the calf, and dissolve in half a pint of gruel, then add—
Ginger, a scruple;
Essence of peppermint, three drops.

The Epsom salts are far preferable to any kind of oil for purging young cattle, as well as far less expensive than most of them.

After the first or second day it will be prudent to tie the calf in a corner of the hovel, that it may not be always sucking the mother, otherwise it may overgorge itself with milk, which will coagulate in the fourth stomach, and choke it up, and produce disease, and even death. If it is evident that the cow would yield more milk than the calf should have, it is the custom, and very properly, to take away a portion of it from her two or three times in the day, before the young one is unfastened.

The time that the calf remains with the mother is chiefly regulated by the usual system which the breeder pursues, but reference should always be had to the state of the cow's udder. If it is perfectly free from knobs, or kernels, or hardness, the calf may be removed at a very early period; but if any induration of the teats appears, the young animal should be permitted to suck a while longer. The frequent sucking will prevent the milk from curdling in the udder, and also the friction and shaking of the bag by the jolting of the calf's head in the act of sucking, will contribute not a little to the dispersion of the tumours. I have already spoken of garget, and shown that a very prevalent cause of it is the weaning of the calf too soon.

Few things are more injurious than the exposure of the young calf to wet and cold. It lays a foundation for rheumatism and hoose, which no medical treatment can afterwards remove.

For every information with regard to the rearing of calves from the pail, the reader is referred to the newest edition of "The Complete Grazier," which should find a place in the library of every agriculturist.

Bleeding from the navel string is not an uncommon complaint among calves, and it is a very troublesome one. The first thing to be done is to pass another ligature round the string nearer to the body; for if the bleeding is not stopped the life of the young animal will sometimes be endangered. It may happen, however, that the first ligature may have been nearer to the belly than it ought to have been, so near, indeed, that another cannot be passed within it. A pledget of lint that has been dipped in a decoction of galls (half-a-dozen galls bruised, and boiled in half-a-pint of water), should be placed over the part, and confined with a proper bandage. This will be far preferabl to the blue vitriol, and oil of vitriol, which some cow-leeches are so fond of applying. It will stop the blood, but not eat into and destroy the part.

From the application of the caustic, or even of the second ligature, a great deal of swelling will sometimes take place. This should be well fomented until inflammation is pretty nearly subdued. The after-treatment will depend on circumstances. If there is a solid tumour, the fomentation, or a poultice, must be continued until the swelling breaks, or points so decidedly that it may be opened with a lancet. Poultices must be applied until the matter has fairly run out. A little Friar's Balsam will then usually complete a cure.

In consequence of the bleeding and discharge of matter the calf will sometimes be exceedingly reduced; some tonic medicine will then be necessary. The Recipe No. 10, p. 64, given in half-doses, will be serviceable, and at the same time the calf should be forced with good oatmeal or peameal gruel.

DIARRHŒA.

One of the most frequent and fatal diseases to which young calves are subject is diarrhœa, or violent purging. It occurs most frequently when the young animal is from a fortnight to six weeks old, and is in the majority of cases the consequence of neglect. The calf has been too early exposed to cold and wet, or he has been half starved, and one full and hearty meal disarranges the whole alimentary canal. It is bad policy to stint the calf too much in its quantity of milk. The loss of two or three calves in the course of a year will more than swallow up the supposed saving resulting from a system of starvation.

At the time of weaning, or when the food is changed from milk to gruel or porridge, diarrhœa and dysentery are very apt to occur, and are subdued with great difficulty. The weaning and change of food should be effected slowly, and with a great deal of caution. The new milk should be mixed with the skim milk or gruel which is afterwards to be substituted, and the quantity gradually decreased.

The symptoms of diarrhœa in calves are, continual purging, mucous, sometimes bloody, and often fœtid; the animal loathes its food, staggers as it walks, and becomes rapidly thin. Towards the last stage of the disease the stools become still more fœtid and bloody, a great portion of mucus mixes with them, and at length the discharge seems to be composed of mucus and blood, without scarcely any mixture of natural fœcal matter. When this occurs there is little or no hope of cure.

The principal thing is to treat these diseases in time, before the mucous coat of the intestines becomes so inflamed, that a bloody discharge ensues, which soon wears the animal down. Much acidity in the stomach and bowels attends all t complaints; therefore, it is necessary to get rid of it by the exhibition of chalk, or some other medicine with which the acid will readily combine.

Opium in some form or other must always be united with the chalk. It is no use to get rid of one complaint when others are lurking and ready to appear. It will not be sufficient to get rid of the acidity of the stomach, the mouths of the vessels that are pouring out all this mucus and blood must be stopped; and we have not a more powerful or useful medicine than this in our whole catalogue of drugs. It acts by removing the irritation about the mouths of the vessels, and when this is effected they will cease to pour out so much fluid. Other astringents may be added, and a carminative mingled with the whole to recall the appetite, and rouse the bowels to healthy action. The following medicine will present the best combination of all these things:—

RECIPE (No. 63.)

TAKE—Prepared chalk, two drams;
Powdered opium, ten grains;
Powdered catechu, half a dram;
Ginger, half a dram;
Essence of peppermint, five drops:
Mix, and give twice every day in half a pint of gruel.

This will be the proper dose for a calf from a fortnight to two months old. If the animal is older the dose may be increased one half. The common

Dalby's Carminative is not a bad medicine, although a dear one, and may be given in doses of half a bottle at a time.

When this has been given some time, and has failed to stop the purging, I have known the following given with very good effect:—

RECIPE (No. 64.)

TAKE—Dover's powder, two scruples;
Starch, or arrow-root, in powder, one ounce;
Compound cinnamon powder, one dram;
Powdered kino, half a dram.

Boil the starch or arrow-root in a pint of water until it becomes well thickened, and then gradually stir in the other ingredients.

This may be given morning and night.

When constant and violent straining accompanies the expulsion of the dung, an injection of a pint of thick gruel, with which half a dram of powdered opium has been mixed, will be very useful.

Diarrhœa will often in the early stage be accompanied, not only by inflammation of the bowels, but much general fever. This will be known by the panting, and heat of the mouth, and uneasiness, the animal lying down and getting up again, rolling, or kicking at its belly. It will then be prudent to bleed. A pint will be the proper quantity to be taken from a calf under a month; after that an additional ounce may be taken for every month. When, however, the diarrhœa has been long established, and the calf is getting weak, and rapidly losing flesh, it would be madness to bleed; the strength of the animal would be more speedily exhausted, and its death hastened. Chalk, or starch, astringents, and carminatives, will then afford the only rational hope of success. After the cure has been completed a great deal of care should be taken respecting the diet of the animal, and it will sometimes be useful to give him a lump of chalk and another of salt in his feeding place, to lick them when he likes.

COSTIVENESS.

This occasionally attacks young calves a few days after they are born. It is then caused by coagulation of milk in the fourth stomach, which is completely distended by, and choaked with the solid curd. There is not often any remedy for this. The most likely method to succeed is by means of the stomach-pump, so often recommended, and thus to pour in plenty of warm water in which Epsom salts have been dissolved. The first dose may be two ounces, dissolved in two or three quarts of water, and ounce doses may be given every six hours afterwards, likewise in a couple of quarts of warm water, until the bowels are opened.

The costiveness at this time is generally produced by bad management. Either the calf is suffered to suck too plentifully, or put to a cow whose milk is too old, or fed with new milk from the dairy promiscuously. All these things are injurious, and thousands of young animals have been destroyed by them.

When costiveness occurs in calves of two or three months old, it is when they have been too suddenly changed from fluid food, as gruel or porridge, to that of a dryer and more stimulating kind, and consisting principally of hay. This is a dangerous complaint, for there is not only obstruction usually in the *manyplies* or third stomach, which is employed in rubbing down the hard fibrous food, and becomes overloaded and clogged, but the paunch itself is generally filled with undigested food, and rumination has ceased.

Here again every thing depends on diluting the hardened mass, and opening the bowels. The first dose of medicine should consist of a quarter of a pound of Epsom salts, dissolved in a gallon of warm water. It will not be forgotten, that by introducing the pipe a little way, or far down the gullet, the medicine may be thrown at once into the third and fourth stomachs, or into the first. If it is introduced only a little way, and the pump worked gently, the fluid will pass on through the canal at the base of the gullet, which was described in the early part of the work, and enter the third stomach. Flowing through this in considerable quantities, it will perhaps dissolve, and wash out the hardened mass contained between the leaves of the manyplies, while the salts will open the bowels, and by emptying them solicit the food forward from the gorged stomachs.

If, after the bowels have been well opened, the cud should not return, it will be prudent to have recourse again to the stomach pump, the tube of which should now be pushed farther down the gullet until it enters the paunch. If plenty of warm water be now pumped in, and with some force, it will stir up the contents of the paunch, and cause them to be disgorged into the canal leading to the true stomach, or vomiting will be excited, and the greater part of it thus brought away. The stomach will probably act upon the little that remains, and rumination will again be established, and the animal will do well.

There are few things so dangerous to young cattle as being thus sapped or costive. It is the foundation of fever, and of many a serious complaint. As soon as the dung is observed to be hard, a dose of physic should be given to the calf. A little attention to this would keep the breeding stock in good order, and their preservation, and health, and rapid thriving, would abundantly repay this little trouble and expence. Farmers in general, however, are shamefully careless here, and no notice is taken of half the diseases under which these animals evidently labour, until they are past all cure.

All cattle are subject to occasional costiveness, and which should be removed as early as in the calf, as being the frequent root of all evil. It is either one of the symptoms of the beast labouring under inflammatory fever, or it lays the foundation for inflammatory fever. A purge of Epsom salts, or even of common salt, will not cost much, and would save the life of many a beast; let not the farmer, however, follow up the farrier's practice of giving a cordial drink two or three days after the physic, under the notion of removing flatulence, and promoting digestion, and invigorating the system. The fever of which this costiveness is either the forerunner or the cause, would only be hastened and aggravated by this absurd system of giving cordial drinks.

THE HOOSE IN CALVES.

This disease in the adult animal has already been considered; in the calf it assumes different and more aggravated symptoms, and is more speedily connected with consumption and death. The moment a calf is observed to cough violently, he should be removed from the pasture, and put under tolerably warm shelter, and taken care of. A bleeding, and a dose of physic, and a fever powder after that will usually restore the animal to perfect health.

At times the hoose is epidemic among cattle, and hundreds of them die. Proper treatment at first will, in the majority of cases, remedy the evil;

but should the animal get rapidly worse, and his cough be peculiarly violent and distressing, care should be taken to examine the first that happens to die, on the farmer's own estate, or that of his neighbour, and if the windpipe and the air tubes below should be found filled with the worms which I have already described, recourse should be had to the spirit of turpentine, which will often succeed in destroying them. The principle on which the turpentine acts has been already explained. The origin of these worms has not yet been satisfactorily developed; but one thing is certain, that in nine cases out of ten the farmer may attribute all the losses he sustains to neglect of the calf, or premature exposure of him to cold and wet.

CANKER IN THE MOUTH.

The teeth of the young calf follow each other in rapid succession, and, as is the case with the human infant, the cutting of the teeth is attended by soreness of the mouth, and disinclination to eat. Numerous pimples also appear about the gums and membrane of the mouth, and these often run together, and considerable ulceration follows, and the animal pines away through lack of nutriment. The gums and tongue are sometimes considerably swollen, and no small degree of fever is found. The first business is to evacuate the bowels. Epsom salts will here also constitute the preferable medicine, given in doses of one or two ounces, and repeated daily until the proper effect is produced. As a local application equal parts of tincture of myrrh and water may be advantageously applied to the mouth, or a solution of common alum in water, in the proportion of half an ounce to a pint of water. Should any considerable degree of fever accompany the soreness of the mouth, the fever drink already recommended may be given in half doses, with a scruple of magnesia added to each.

ON THE

DISEASES OF SHEEP.

LITTLE is known, and less is attempted to be done in this most important division of our subject. The diseases of sheep are thought to be scarcely worth the farmer's attention, and he never thinks of employing a veterinary practitioner about them unless almost the whole of his flock is infected, and then he will apply too late, for the system of management has been so injurious, or the disease is so firmly established, that medical aid will be fruitless. This is much to be lamented, and very absurd; for although an individual sheep may not be worth much, yet numerous flocks of sheep form no inconsiderable portion of the farmer's wealth, and the frequent mortality among these animals is a very serious loss to him.

The internal structure of the sheep so nearly resembles that of the ox, that I will content myself with referring to the anatomy of the ox, as described in the early part of this work. The diseases of both have a very great resemblance in their nature and cause, and progress, and medical treatment. The same drugs are administered to both. There cannot be a better purgative for sheep than Epsom salts; there is no better fever medicine than the digitalis, emetic tartar, and nitre. The principal difference is in the quantity to be administered; a sixth or eighth part of the usual dose for cattle will be sufficient for the sheep. The quantity of blood taken will depend on the size of the animal, and the nature of the disease. Four ounces would be a fair average bleeding from a lamb, and a pint from a full grown sheep. Shepherds are apt to bleed from the eye-vein; but the blood generally flows slowly, and, after all, the proper quantity will not always be obtained. The best place for bleeding is from the jugular, as in cattle. A ligature should be tied round the neck, when the vein will rise so evidently, that it cannot possibly be mistaken. It should be opened with a small lancet, such as is commonly used for the human being; the orifice should be large, and the blood obtained as quickly as possible.

SECTION I.

THE LAMBING SEASON.

This depends wholly on the time when the tup is put to the ewe, and she carries her lamb five months. The general time of yeaning is about the end of March, but in some of the western counties, and particularly in Dorsetshire, by which the metropolis and some of the towns in the west are principally supplied with house-lamb, it is so contrived that the lambs shall be dropped in the middle, or even the beginning of February. With the best care a great deal of danger attends this early lambing, and even at a later period a few cold nights are fatal to many lambs. There is nothing that requires more reformation than the neglect both of the ewe and the lamb at the time of yeaning.

During the time of gestation more attention is required than is generally paid. To enable the ewe to bring her lamb with comparative safety, she should not be too well fed. I have said that one of the most prevalent causes of puerperal fever, or dropping after calving, in the cow, is her too high condition. If she is fattened while she is in calf it is very probable that a dangerous degree of fever will attend the period of parturition. It is more particularly so with the ewe; and there are few things that the farmer should be more careful about than that the fair, but not unusual or forced, condition of the animal is preserved. A week or two before the time some better keep may be useful to put them a little in heart. It is a kind of middle course which the farmer has to pursue, and the path is not very difficult to trace. If the ewe is in high condition at the time of yeaning she will probably experience considerable pain and difficulty; she will be disposed to have fever, and may be lost: on the other hand, if she has been too poorly kept, she will not have sufficient strength to go through the process safely, and she will probably not have milk enough for the lambs. If the dam has not sufficient support previously, the lamb will be weakly when it is brought forth, and not thrive well afterwards.

When the time of yeaning closely approaches a little care may prevent very great loss to the farmer. The ewes should be brought as nearly home as possible. They should be sheltered, if it be only by a high and thick hedge, from the north wind: a kind of shed, however rudely constructed, would abundantly pay the expence of building it. At night, particularly, they should be folded in some sheltered place.

At the period of lambing the shepherd should be far more attentive than he is generally found to be, and especially than he is if the pelt of the dead lamb is absurdly made his perquisite. If the master's loss is the servant's gain, it is not to be wondered at that there are so many casualties. A reward increasing in proportion to the number of ewes and lambs saved would do more than any other thing that I am aware of to save both the dam and her offspring. The care of the farmer or lamber will vary a great deal according to the period of the spring, and the state of the weather. In the early lambing the greatest losses are at the beginning; they arise principally from cold. In March or April the latter part of the lambing season is most dangerous, for there is more abundant keep, and more tendency to inflammation.

The *clatting* of the ewes is a very useful practice now. They are thrown, and a portion of the wool is removed from their tails and udders. The sticking together of the wool from the purging to which the ewe is often subject in the early part of spring when the grass is fresh has lost many a lamb. When the udders are thus cleaned the lamber will more easily perceive the stain on the part which, and which alone, will sometimes tell him whether the ewe has yeaned, for it is no uncommon thing for a young ewe to desert her lamb, and be found grazing with the rest of the flock as unconcernedly as if nothing had happened.

An experienced lamber will almost always tell when the ewe is about to yean. If he finds her soon afterwards taken with labour pains, which continue to succeed each other regularly, and she continues lying down, he takes great care not to disturb her; but if a couple of hours pass, and the lamb is not dropped, he carefully examines her. If the nose and the tips of the toes have presented themselves, and the lamb seems to be in the proper position, but the head is large, or the ewe is narrow, he leaves her again for another hour; but if there is evidently a false presentation, he catches her, introduces one or two fingers well guarded with oil, puts the young one in the proper position, and nature speedily effects the rest.

The principal art of the lamber is to know when he should interfere: always, I would say, in case of a false presentation; but otherwise very rarely, except the mother is nearly exhausted, or the life of the young one appears to be in danger. One moment's observation will discover the state of the mother; and the degree of protrusion of the tongue of the young one, and its colour, will not often deceive with regard to him. When the tongue hangs far from the mouth, and is getting livid or black, it is high time for the lamber to interfere.

The lamber will use as little force as possible; but then he will recollect that the ewe will often bear a great deal of force being applied without the slightest injury to her, and sometimes with no great danger to the little one. The exhausted state of the one or the other, will regulate the degree of force. When there is much exhaustion no time is to be lost, and some strength should be applied in the extrication of the lamb.

The state of the weather, too, will somewhat regulate this. In cold weather more time may be allowed. The process of parturition is then slower. In warm weather there is more tendency to fever, and the ewe should not be suffered to exhaust herself too much.

Unnatural presentations are often very awkward things to have to do with. The ewe should be driven into the pound, and after having rested a few minutes, some of the fingers, or the hand, if it is small, should be introduced into the vagina. If only one leg presents, and the shoulder thus forms an obstruction, the other leg will generally be easily laid hold of and brought down. If the neck is bent, and the crown of the head presents itself, it may be pushed back, and the two fore-paws brought into the passage, when the muzzle will naturally follow. If the fœtus lies sideways, the cord will distinguish between the ribs, or the spine, the side, back, or belly. The turning is sometimes a difficult thing; but practice will often give to the lamber a great deal of cleverness in this operation.

In extreme cases, and when the lamb is evidently dead, it may be necessary to introduce a blunt-pointed knife into the uterus, and cut the fœtus to pieces. The greatest care must be taken that the mother is not wounded, for that would produce inevitable death. When the lamb has been thus taken away piecemeal, a little physic—

an ounce of Epsom salts, with a few grains of ginger—should be given to the mother, who should then be left undisturbed for several hours.

The ewe, and especially if she was in high condition, is occasionally subject to *after-pains*. Some of the country people call it heaving. It continues many hours, and sometimes exhausts and destroys the animal. It is particularly dangerous if she has been too well kept, and much force has been used in extracting the lamb. Twenty drops of laudanum should be given in a little gruel, and repeated every second hour until the pains abate. It will always be prudent to bleed the ewe if she is not better soon after the second dose of the laudanum.

The womb is sometimes forced out of the orifice when great force has been used in extracting the calf. It must, if necessary, be cleaned with warm water, and carefully returned by a person with a small hand. Gentle and continued pressure will effect this much sooner and safer than the application of the greatest force. It will, however, again protrude if a couple of stitches with tolerably strong twine are not passed through the lips of the orifice. If the womb is thus returned before it has been much bruised or inflamed by hanging out, there will be little danger to the mother, who may suckle her lamb as usual. When she has accomplished that, she should be fattened, for the same accident would almost certainly happen at her next parturition.

Attention should now be paid to the lamb, and he requires it even more than the mother. It is want of care that causes the loss of more than four-fifths of the dead lambs. The principal evil is exposure to cold. If the weather is severe great numbers of lambs are often lost in a single night. A few hurdles with straw, or a warm quick hedge, would save the greater part of them. The farmer need but use his observation to be convinced how eagerly the ewes and the lambs seek that shelter, and how safe they are compared with others that are exposed. Some breeds are more hardy than others, but the hardiest of them will not endure absurd and cruel neglect and exposure. Let the farmer think of the sudden change from the warmth of the mother's womb, to the driving sleet, and the cold wet ground; he will not wonder that so many of his lambs are palsied and starved to death.

The lambs are not quite out of danger when a day or two has passed after they have dropped. They live for the first week or fortnight on the mother's milk, and then begin to imitate their parent and graze a little; indeed, they have not their teeth up to enable them to graze at first. They should not be put on too good pasture at this early period, for the change of food is often dangerous. A lamb of a fortnight old will often sicken suddenly, refuse the teat, cease to ruminate, swell, heave, and die, in less than 24 hours. On being examined the stomach is sometimes found enormously distended, at other times there is little food in it, but always there is a great deal of bile in the upper intestines, with inflammation there, the evident cause of death, and produced by the change of food. When, at three and four months old, the lamb is perfectly weaned, he is subject to a similar complaint, and from a similar cause. The lamb should certainly have better pasture when he is deprived of his mother's milk, but the change should not be sudden and violent. Those who die at the earlier period are often called *gall-lambs*, from the great quantity of bile found in the intestines.

Physic will evidently be required here, such as Epsom salts in doses of half an ounce every second or third day; and if there is much swelling the stomach pump will be used with advantage, both in extricating the gas, and in injecting warm water into the stomach, either to cause vomiting, or to wash out the contents of the stomach.

The operation of castration is a very simple one in the sheep, and yet is often attended with danger, sometimes resulting from the unskilfulness of the operator, and at other times from some unfriendly state of the atmosphere. I have known on the same farm, and the same gelder being employed, that in one year not a lamb has been lost, and in the following year several scores. Generally speaking, however, the fatal result is to be attributed to bad management. The younger the lambs are the better, provided they are not very weak. From ten days to a fortnight seems to be the most proper time, or, I may say, as soon as the testicles can be laid hold of. I would advise the farmer never to set apart a day when the whole or the greater part of his male lambs are to undergo the operation, for many of them will then be too old, and he will assuredly lose some of them, he should take them soon as they are ready, although there may be only a few at a time.

The lamb being well secured, the scrotum or bag is to be grasped in one hand high up, and the testicles pushed down as low as possible; two incisions are then to be made across the bag at the bottom of it, and the testicles forced out. The gelder now often takes the stones between his teeth, and bites the cord asunder. This is a nasty, and a cruel way of proceeding. The better way is to draw the testicles down an inch or more from the scrotum, and then to cut through the cord close to the scrotum with a knife that is not very sharp. Scarcely a drop of blood follows when the cord is thus separated, the upper end retracts into the bag, and there is not half the danger of inflammation which there is when the cord is gnawed and torn by the teeth.

Except the lambs are very weakly, and the ewes much exhausted and emaciated, it will not be requisite to give any medicine after yeaning. In the great majority of cases the animals will do a great deal better without it. Should, however, tonic medicine be necessary, I know nothing better than the following:—

RECIPE (No. 1.)

TAKE—Gentian root, powdered, one dram;
Carraway powder, half a dram;
Tincture of carraway, ten drops.
Give in a quarter of a pint of thick gruel.

If they will not feed well they should be forced with good gruel, and the best is made of equal parts of oat and linseed meal.

SECTION II.

THE DISEASES OF YOUNG LAMBS.

THESE are numerous, and many of them dangerous; some belonging to the period which I have been describing, and others often occurring when the animals get a little older.

COAGULATION OF THE MILK.

I have spoken of this when treating of the diseases of calves. The lamb is, if possible, more subject to it than the calf is, and it carries finest and best of the flock. The farmer likes to see his lambs growing fast; but it is possible to make more haste than good speed. The lamb may have excess of nutriment, and particularly of its mother's milk. When a lamb thrives at an extraordinary rate, the bag of the mother should be examined, and it will be prudent to milk away daily a little of its contents, otherwise the yet weak stomach of the young animal may have more coagulated milk in it than it can digest. All the milk coagulates in the stomach, and when it accumulates too fast the stomach has become perfectly choaked with it, and the lamb has died. Two pounds of curdled milk have been found in the stomach of a lamb. When a thriving lamb, with a healthy mother with a full bag, begins all at once to be dull, stands panting and distressed, can scarcely be induced to move, is costive, and considerably swelled, it is probably from this cause. Plenty of warm water should be poured down by means of the stomach pump with a smaller tube, and with half an ounce of Epsom salts dissolved in the water. The farmer with a valuable flock of sheep will find the stomach-pump as useful for them as for cattle. When the bowels have thus been opened, and the curdled milk has in some measure passed off, the stomach may be strengthened by occasional doses of the Tonic Drink, No. 1, p. 229. The ewe and lamb should then be turned into scantier pasture.

DIARRHŒA.

There is not a more destructive disease among young lambs than this. It frequently attacks them when they are not more than a day old, and carries them off in the course of another day. Oftener it does not attack them until they are nearly a week old; they have not then a great deal better chance: but if they are two or three months old, and have gained a little strength, they may, perhaps, weather the disease. The causes are various, but not always difficult to discover, and generally referable to the neglect or mismanagement of the farmer. It may be the consequence of absurd and cruel exposure to cold. For sheep generally, and more particularly for lambs, I once more repeat it, and I would impress it on the mind of the farmer and the practitioner, shelter is the first and grand thing to be considered. I do not mean in a close and ill ventilated place, but that defence from the wind and snow which it would cost the farmer little to raise, and for which he would be amply paid in one season. If it probably arise from cold the remedy is plain, better shelter, and, for a few days, housing.

It sometimes arises from want of proper support; the ewe, if it is her first lamb, may have deserted it, or she may have little milk to give it; and the combined influence of starvation and cold produces diarrhœa sooner than any thing else. Warmth, and new cow's milk are the best remedies

Not unfrequently the mother's milk seems to disagree with the lamb. It is naturally aperient. It may now be too much so. If her teats are full, and she evidently has plenty of milk, this will probably be the case. She should be fed on dry meat for a day or two, or should be turned out only during the day, and housed at night, when she should be allowed a little hay. While the food is altered the bowels should be well cleansed. There may be something amiss about the ewe, which causes the milk to be thus purgative and unwholesome. The best purgative for sheep is the following:—

RECIPE (No. 2.)

Purging Drink for Sheep.

TAKE—Epsom salts, two ounces;
Powdered carraways, a quarter of an ounce;
Warm thin gruel sufficient to dissolve the salts.

This being given to the mother will likewise be of service to the lamb, by helping to carry off any acidities or crudities from the stomach or bowels.

In a disease so fatal, and which runs its course so rapidly, no time is to be lost, and therefore astringent medicine should be administered to the lamb as speedily as possible.

RECIPE (No. 3.)

Astringent Drink for Lambs.

TAKE—Compound chalk powder with opium, two ounces;
Gentian, a scruple;
Essence of peppermint, three drops:
Mix with a little thin starch, and give morning and night.

If the animal should still linger on, and the purging should not be much abated, it is probable that the milk of the mother is most in fault. The lamb should in this case be immediately taken from her, and fed with cow's milk boiled, to every pint of which a scruple of prepared chalk has been added, the astringent drink being continued as before.

If the purging abates, the medicine should be immediately suspended, or not given so frequently, lest costiveness should follow, a disease which I shall presently describe, and which is often fatal.

The lamb with diarrhœa should immediately be docked if the operation had not been previously performed, and the hair should be carefully cut away under the tail, otherwise it is liable to become clotted. It will adhere together, and form an obstruction about the anus, so that the fæces cannot be discharged. The least ill consequence of this will be very great soreness about the part; but in many cases the animal will die from the obstruction before the existence of it is suspected.

The colour of the discharge will considerably influence the mode of treatment. If it is of an olive-green colour, the drink should be persevered in, and on every third day half a table-spoonful of castor oil should be administered. If it is of a white colour, the gruel must be made thicker, and two grains of calomel added to the drink once in two days, the medicine being continued without the calomel at the other times for administering it.

If the lamb is two or three months old the medicine should be correspondingly increased, and he has a better chance; if he is five or six months old he will only be lost through the negligence of the farmer or attendant. The same means must be pursued; but another thing must be added, and that of the greatest importance,—a change of pasture from a succulent to a bare and dry one. The removal to a stubble field is a frequent, and a very successful practice.

COSTIVENESS.

When no evacuation appears to be made, but the animal is continually straining, two circumstances must be carefully examined into,—first, whether there is the obstruction of which I have spoken, utterly preventing the discharge of the dung; and if this should not be the case, whether, after these efforts a drop or two of liquid fæces may not be seen: this would clearly indicate a very different state of the bowels from costiveness; the bowels are actually relaxed,—too much so, and the straining results from irritation about the anus.

Actual costiveness, however, is not an unfrequent complaint, and must be speedily attacked, for it is either the accompaniment of fever, or it will very speedily lead on to fever. The existence of fever should be carefully inquired into; heaving of the flanks, restlessness, and heat of the mouth, would be sufficient indications. Bleeding in proportion to the degree of fever, and the age and strength of the lamb should then be had recourse to. Next, the bowels must be opened: one-fourth of the Purging Drink, No. 2, p. 232, will be the best thing that can be given, and it should be repeated every sixth hour until the desired effect is produced. The lamb may be turned into greener and more succulent pasture, and especially where there is any fresh flush of grass; and if, after a while, he should altogether refuse to eat, he may be drenched with gruel, in which a little Epsom salts should always be dissolved. While this affords nutriment, it will cool the animal, and open the bowels.

STAGGERS.

Many lambs are lost from this disease, and the farmer most certainly has here no one to blame but himself. It attacks the most thriving lambs, and especially when they are about three or four months old, and it arises from the farmer making a great deal more haste than usual in fattening them for the market. It resembles *the blood* in cattle, and is usually produced by the same causes.

The lamb will appear to be in perfect health. All at once he will stand still, heaving violently at the flanks, the head protruded; or he will wander about with a great uncertainty in his walk and manner; he will then all at once fall down, and lie struggling upon his back until he is helped up, or dies. Sometimes he is very much convulsed.

Bleeding must be resorted to immediately, and afterwards the bowels well opened by means of the Purging Drink. If the animal does not immediately die, some cooling febrifuge medicine should be given, after the bowels have been well opened.

RECIPE (No. 4.)

Cooling Fever Drink.

TAKE—Powdered digitalis, one scruple;
Emetic tartar, ten grains;
Nitre, two drams:
Mix with thick gruel, and let it be given twice every day.

On examination after death, the head will be found to be the principal part diseased, the vessels will be distended with blood, and there will sometimes be water in the ventricles.

I have seen half a dozen lambs in staggers in the same field at the same time. They had all been exposed to the same cause, and when the disease had begun in one or two it spread among the rest by the strange, and often too powerful influence of sympathy

SECTION III.

RED-WATER.

THIS disease is most prevalent at the latter end of autumn or the beginning of winter. It is generally observed among those who are in the most thriving condition, and especially if they have been turned into new and rich pasture, and by the side of a copse or wood. Sometimes it is very sudden in its attack, and speedily fatal. In some fine flocks I have seen it destroy the animal in twenty-four hours; but that was inflammatory fever rather than pure red-water, and the kidneys shared in the general affection. In other cases it is less violent, and also slow in its progress. The sheep is first observed to be off its feed, dull, disinclined to move, loiters behind, pants, is restless; then follows the red-water: first, the urine is simply tinged with blood, then there appears to be a great deal of blood in it; it afterwards seems like unmixed blood; and last of all assumes a black colour, and becomes fœtid. It is inflammation of the kidneys, and rupture of some of the vessels of the kidney.

The plan already recommended for the treatment of inflammatory diseases in cattle must be here pursued. The sheep should be bled, should have repeated doses of Epsom salts, and be turned into the shortest pasture that there is about the farm. In some cases it will happen that the physic and bleeding will nearly or quite remove the complaint; but should it continue, and the discharge of blood be as profuse, the kidney, the part particularly diseased, must be stimulated. Turpentine must be given.

RECIPE (No. 5.)

Drink for Red-water.

TAKE—Oil of turpentine, and
Olive oil, an ounce each:

Mix them well together, and give them in a quarter of a pint of gruel.

The bleeding now probably proceeds from weakness of the vessels more than active inflammation, and this stimulus being applied to the part (for turpentine has its principal effect on the kidney), they may perhaps recover their tone.

At the same time, as in cattle, astringents may sometimes be administered with manifest advantage, but small doses of Epsom salts must also be occasionally given if the bowels should become confined.

RECIPE (No. 6.)

Astringent Drink for Red-water.

TAKE—Powdered catechu, half a dram;
Alum, a scruple;
Ginger, a scruple:

Mix, and give in a quarter of a pint of the decoction of oak bark, made by boiling three ounces of oak bark bruised, in a quart of water, until it is reduced to a pint and a half.

The pasture should be changed the moment red-water appears in a flock. A dry pasture, with a short bite, and where there are no leaves of trees lying about, has, in cases of simple red-water, effected a cure without the aid of any medicine. When sheep are first put upon turnips, red-water occasionally appears among them. The first step towards a cure—change of food—is likewise indicated here too. Shorter pasture should immediately be found, and if the sheep are afterwards turned back to the turnips, or clover, or succulent grass, they should have a portion of good hay, sprinkled with salted water, allowed them at night.

Every shepherd should have a little horn made of that of a sheep, which will hold about the usual quantity of medicine given as a drink, or at least the quantity which it will hold should be carefully ascertained, and then a large bottle of the mixture may be taken into the field, and the proper dose given to as many of the sheep as may seem to require it, without the trouble of measuring it every time.

SECTION IV.

THE BLOOD.

THIS is a disease too well known by farmers, and occasionally prevalent in every part of the kingdom where the pasture is luxuriant, and the system of close feeding is practised. I have known more than a hundred sheep die on one farm in the course of a fortnight, and entirely because the farmer would not take warning by the loss of the first, and put them on poorer ground, but obstinately pursued his plan of fattening them as fast as he could. In spring, particularly when the young grasses shoot and are full of juice, and especially after a few warm days, the blood appears in the flock, and the sheep die away by scores. The rich pastures of Romney Marsh, in Kent, and the sedgemoors in Somersetshire, are particularly productive of this malady.

It is not always that warning is given of the attack, but generally the affected sheep will separate himself from the rest of the flock, appear dull, hang his head, his eyes will be heavy, and, if examined, bloodshot. The animal will breathe short at the flanks, stretch out his fore-legs to ease himself, with great difficulty be induced to move, or will stagger about, threatening to fall every moment. If neglected, six hours will occasionally close the affair, and the animal will very rarely live eight-and-forty. On being examined there is air, and effusion of yellow or reddish fluid through the whole of the cellular membrane; the veins are every where turgid with blood, the muscles livid or black, and the whole contents of the belly and chest dark-coloured, hastening to decay, and offensive almost as soon as the animal is dead. If it is an ewe near her lambing that is attacked, the lamb will always be found dead and putrid.

Bleeding is the grand thing. On it alone can much dependence be placed; and if the animal is bled at the commencement of the disease, and plenty of blood is taken away, he will usually be saved, although nothing else were done. The jugular is the vein that should be opened here, because most blood can be procured from it, and most rapidly procured, circumstances both of immense importance in such a case. The sheep should be bled until it staggers, and falls. Then comes, as in other similar cases, physic, and this should be liberally given. Two ounces of Epsom salts, and no ginger with them here, should be given every second hour until the sheep is well purged, and the purging should be kept up by occasional doses of the medicine for several days.

The bowels having been well opened, the Fever Drink (Recipe No. 4, p. 236) should be given morning and night, and the animal turned on shorter pasture, and a partial system of starvation for a while adopted, and strictly pursued.

It sometimes happens, as I have already mentioned when treating of a similar disease in cattle, that the stage of inflammatory fever rapidly passes, and one of typhus fever, and tendency to putridity and decomposition, succeeds. There is little chance of saving the ox in this state; there is scarcely any of saving the sheep; for when he is once down, and foams at the mouth, and looks anxiously at his sides, it is generally all over with him. If, however, any thing is attempted, the following tonic mixture is as good as any.

RECIPE (No. 7.)

Tonic Drink for Sheep.

TAKE—Gentian root, powdered, a dram;
Ginger, a scruple;
Spirit of nitrous ether, a dram;
Tincture of cardamoms, a dram:
Mix, and give in a little gruel.

It is a very good practice when the disease once appears in a flock, to bleed every sheep, and give each a dose of physic, and change the pasture.

SECTION V.

STURDY, GIDDINESS, OR WATER IN THE HEAD.

THIS is a very singular, and also a very fatal disease. It commonly attacks yearlings; a two or three-shear sheep is generally exempt from it. The animal becomes dull, separates himself from the rest of the flock, is frightened at the most trifling circumstance, and at the least noise; he runs round and round, but always in one direction; holds his head on one side; if there is a brook in the field he will stand upon its banks, poring over the running stream, and nodding and staggering, until he very frequently tumbles in; or he breaks from his fit of musing, and gallops wildly over the field, but with no certain course, and with no determinate object. Soon his appetite fails, or he evidently feels so much inconvenience when he stoops to graze, that he gives up eating altogether; and then he wastes rapidly away, seems to be half stupid, and at length dies a mere skeleton.

The disease generally attacks the weakest of the flock. It is evidently connected with some peculiar state of the atmosphere. It is most prevalent after a moist winter, and cold, and ungenial spring. It usually begins in the spring, continues through the summer, and disappears as the winter approaches. It is not contagious, nor does it seem to be hereditary; it is dependent partly on the season, but more on the health and strength of the animal. It may be prevented by good and upland pasture; and is most common in low and marshy ground. Having once attacked the animal, and gradual loss of flesh having commenced, the case is hopeless.

All medicine will be thrown away. It is the consequence of pressure on the brain by a strange, bladder-like-formed animal; and it would be more for the advantage of the owner to destroy the sheep if he is at all fit for the butcher, than to commence any desperate and fruitless course of medicine. Farmers now seem to be agreed that all the symptoms depend on water in the head, and that a young and weakly sheep is more liable to this accumulation of water than an older and stronger one, and especially after a wet season. They found at length that it was a bladder of water, but they did not comprehend that that bladder was an animal that had got there in some unknown way.

They took various methods to break this bladder, as hunting the sheep with dogs, and frightening him half to death, throwing him into a gravel pit, and various other absurd as well as brutal methods. They much oftener succeeded in breaking the animal's neck than rupturing the bladder. At length some bethought them of getting at, and puncturing or removing, this bladder by some operation. They thrust iron wires or skewers up the nostril, and into the brain, and sometimes succeeded in effecting their purpose. If they hit upon the nuisance, and pierced his envelope or skin, they were made aware of it by a greater or smaller quantity of water flowing from the nostril, and they could always tell on which side the insect lay, by the sheep inclining his head on that side. They could also sometimes tell the very situation of the hydatid, for after being a long time inclosed between the skull and the brain, and pressed upon by both, and pressing upon both of them in turn, not only in consequence of that pressure was a portion of the brain below destroyed and absorbed, but even the bone above was softened, and thus the place where the enemy lay was pointed out by the softening, or destruction of the bone, nothing but a yielding membrane sometimes remaining over a particular spot. Some surgeon suggested that this membrane should be punctured, and it was done so with the lancet, or, oftener, a heated sharp-pointed wire, and thus the creature beneath was wounded and destroyed. Others improved upon this method of operating. A surgeon's trephine was used, and a circular piece of the skull taken out at the place where it was softened, and thus the hydatid was taken out bodily, and when it was done carefully and completely, the hydatid, by slight but sufficiently distinct motion, showed that it was alive.

Both these operations occasionally succeeded, but the instances of failure were so numerous, that the farmer's interest still required that he should kill every sheep, unless a favourite, or very valuable one, as soon as he was evidently sturdied, and before he had wasted and become unfit for the market.

There may, however, be some prevention, although no cure; and that prevention consists in good, and sufficient, and upland pasture: yet in some untoward seasons even this will not avail with unhealthy and weakly animals. Habitual shelter from the sleet and snow of winter, is another and very important means of prevention. I cannot refrain from again repeating it, that the unfeeling abandonment of the sheep to all the inclemency of the coldest weather, is the fruitful source of the majority of the diseases, and of the most fatal ones, to which these animals are subject.

This malady is sometimes accompanied by palsy. Every continued pressure on the brain is apt to produce loss of power over some of the limbs; but in this case the palsy is variable; it shifts from limb to limb, and from side to side, and, unlike simple palsy, is generally attended by partial blindness, and by the greatest degree of stupidity.

I repeat it again, that no medicine can be of the least avail in destroying the *blab*, as it is called in some parts of the country; but if either of the operations is tried, one of the purging drinks may be useful in abating inflammation; and whether the skull is punctured or trephined, a pitch plaister over the wound will preserve the sheep from being tortured by the flies.

SECTION VI.

GOGGLES—INFLAMMATION OF THE BRAIN.

This, although a frequent disease of the sheep, and of the same part, and almost as fatal as that on which I have just treated, is distinguished by such different symptoms, that it is scarcely possible to confound them. Inflammation of the brain generally attacks the healthiest sheep, and of all ages, and more in hot weather than in the early part of spring. There is no character of stupidity about this affection, no disinclination to move, no moving round and round, without any determinate object, but the eyes are protruding, bloodshot, bright, and there is an eager and ferocious, not a depressed and anxious countenance. The animal is in constant motion; he gallops about attacking his fellows, attacking the shepherd, and sometimes quarrelling with a post or tree; he is labouring under wild delirium, and this continues until he is absolutely exhausted. He then stands still, or lies down for a while dreadfully panting, when he starts afresh, as much abroad, and as ungovernable as before.

The first and the grand remedy is bleeding; and that from the jugular, and copiously, and to be obtained as quickly as possible. The guide as to the quantity will be the dropping of the animal. To bleeding, physicking will of course succeed, and the sheep should be removed into a less luxuriant pasture. This also is one of the diseases that should be attacked at its very commencement. Violent inflammation of the brain and its membranes will very soon be followed by serious disorganization; and if water once begins to be formed under the membranes, or effused in the ventricles, the case is hopeless. Here also the attention of the farmer should be directed to *preventives*. One case of goggles may be accidental; but if two or three are seized with inflammation of the brain, the farmer may be assured that there is something wrong in his system of management, and that, which in the majority of cases is the root of the evil, is too rich pasture, and probably succeeding to spare feed. A dose of salts should, therefore, be given to each sheep, and the pasture of the whole should be changed.

SECTION VII.

COLD, AND DISCHARGE FROM THE NOSE.

HERE again, from the cruel and impolitic abandonment of the sheep, hundreds of them are lost during the winter. When they are drenched to the skin by continual rains, or half smothered with snow, and have not even a hedge a yard high to break the biting blast, can it be wondered that cold and cough should be frequent in the flock; that it should be severe and unmanageable, and even occasionally run on to inflammation of the lungs, and consumption and death? I am not an advocate for close housing, or too much nursing. I am aware that we may thus render the sheep unnaturally tender, and more exposed to catarrh and all its consequences; but I would tell the farmer, that the fleece of the sheep, however thick, is an insufficient protection in cold and wet weather, and an open and bleak situation.

The symptoms of catarrh are heaviness, watery eyes, running from the nose. The discharge is thick, and clings about the nostril, and obstructs it, and the sheep is compelled to suspend its grazing almost every minute, and with violent efforts blow away the obstruction. Cough frequently accompanies this discharge; and if there is much fever it will be shown by loss of appetite and rapid weakness.

There is, however, a discharge from the nostrils which sometimes attacks the whole flock, and if it is not attended by wasting in flesh or loss of appetite, the farmer takes no notice of it; for he knows from experience, that in spite of all he can do it will last through the winter, and disappear as the spring advances. But when he perceives this nasal gleet, he should keep a sharp look out over his flock, and if there is one that stays behind, or will not eat, he should catch him, and remove him to a warmer situation, and bleed him, and give him the fever drinks, and nurse him with mashes and hay, and probably in a few days he will be well. But if a second or a third should likewise fail, he must indeed look about him; there is danger to all. He must move the whole flock to a more sheltered situation—he must move them to a pasture of somewhat different character. He must take them from their turnips or their hay, and give them what other food his farm will afford. He should, if he will take the trouble to do so (and he would be amply repaid for the trouble), bleed them all round, and physic them all. This is strange doctrine to the farmer, who is accustomed to look on and let things take their course. It is, however, good advice, and he will find it so, if he will but follow it. Yet let him not in his determination to rouse himself and do something, listen too much to the suggestions of the shepherd or the farrier. Let him not give any of those abominable cordial drinks, which have been the death of thousands. Warmth, housing at night, littering with clean straw, and warm gruel if the animal will not eat or drink, are not only allowable, but useful; nay, I would allow a *little* ginger, or a *little* ale with the medicine; but not those compounds of all manner of hot and injurious spices, which would kindle a fire in the veins of the animal, if it were not blazing there before.

SECTION VIII.

BLOWN, OR BLAST.

THIS is of as frequent occurrence among sheep as oxen, and it is as fatal. The cause is the same, the removal of the animals from poor keep to rich and succulent food. When sheep are first turned on clover, or even on any pasture more nutritious than that to which they have been accustomed, if they are not watched and kept moving during the day, and folded elsewhere at night, they are too apt to overload the paunch, so that it can no longer contract upon and expel its contents; fermentation then ensues, and the extrication of gas; and the paunch is distended to the utmost, and the animal is often suffocated. So prone are some flocks to this complaint, that I have seen it appear when the sheep were brought from the fold-yard into the pasture, before the sun was off the grass. The remedy of the farmer is the same, *paunching*, or thrusting a sharp pen-knife into the paunch, between the hip bone and the last rib on the left side, when the gas with which the stomach is distended will escape. The objection to this practice is the same as in oxen—that when a portion of the gas has escaped, the stomach will no longer be firmly pressed against the side, and the wounds in the side and the paunch will no longer exactly correspond, and a portion of the gas, and of the contents of the stomach too, will pass into the cavity of the abdomen, and (although the animal may seem for a while to recover) will be an unsuspected source of inflammation, and even of death.

The common elastic tube so strongly recommended by Dr. Duncan, is preferable to the knife; the gas will escape as completely, and without any possibility of danger. It is passed down the gullet into the paunch. The stomach pump, however, is here likewise a far preferable instrument, for, as was remarked when treating of the hoove in oxen, the acid fluid which is probably in the stomach, may be pumped out, or sufficient warm water pumped in to excite vomiting, and thus free the stomach of its unnatural load. If neither the pump nor the tube is at hand, the stick with the knob at the end of it, should be passed by the shepherd into the paunch, and thus separating the muscular pillars that constitute its roof, is far preferable to the knife.

When a sheep is first seized with the blown or blast, he will often be relieved by being driven gently about for an hour or two, and put into a bare pasture. In the act of moving, these pillars will be occasionally separated a little from each other, and the gas will escape; but the animal must not be gallopped or driven by dogs, lest the stomach should be ruptured.

The animal having been relieved, or the contents of the stomach evacuated, a purgative should always be administered, and that combined with some aromatic. The following will be useful.

RECIPE (No. 8)

Physic for Blown.

Take—Glauber's salts, one ounce, and dissolve in
Peppermint water, four ounces; to this add,
Tincture of ginger, a dram;
Tincture of gentian, a dram;
Boiling water, an ounce.

This should be given every six hours, until the bowels are opened, and half the quantity on each of the four next mornings.

SECTION IX.

THE YELLOWS, OR JAUNDICE.

SHEEP are subject to several sad affections of the liver, among which ranks that destructive disease the rot. Jaundice is a less formidable malady, but often sufficiently destructive. It consists of a superabundant discharge of bile, or an obstruction of the biliary tubes, and in either case a considerable quantity of bile enters into the circulation, penetrates into the capillary vessels, and thus tinges the skin. A superabundant discharge of bile is the most frequent cause.

The liver seems to be a very tender organ in fatted and pampered sheep, and easily inflamed or put out of order. In the half-starved, half-wild varieties of the sheep, inflammation of the liver and jaundice seldom occur; but too high living exhibits its injurious consequences in this organ first of all. I have often seen, after sheep have been moved into fair but not too luxurious pasture, that if they have escaped *the blown*, a yellowness has soon begun to steal about the eyes and the mouth and the skin generally; and the animal has been dull, and has disliked to move, and has sometimes been purged, but more frequently costive, and the urine has been of a dark yellow brown colour. The liver could not maintain its healthy state under this injudicious increase of nutriment. And when the farmer and the shepherd have either neglected to observe this, or to adopt the proper treatment, many of the sheep have died in a few days. When they have been examined after death marks of intense inflammation have appeared everywhere, but more particularly in the liver, which has been of a redder brown colour, and double its natural size, and broken to pieces with the slightest force.

If it is taken in time this is not a disease very difficult to treat. On the first decided yellowness being observed, the animal should be removed to a bare field, and should have the Purging Drink (No. 2, p. 232), and half-doses of it repeated for several successive mornings, so that the bowels may be kept in a relaxed state. Mercury will not be wanted. Calomel is rarely a safe medicine, and it is a very uncertain one for the sheep. A little starvation, and plenty of purgative medicine, will be all that is required. Should the animal appear to be considerably weakened, this drink will be useful.

RECIPE (No. 9.)

General Tonic Drink.

TAKE—Gentian, two drams;
Colombo, one dram;
Ginger, half a dram;
Tincture of orange peel, one dram.
Give in four ounces of warm gruel.

SECTION X.

THE ROT.

THIS disease is the very pest of the sheep, and destroys more of them than all the other maladies put together. There are few winters in which it may not be safely said, that more than a million perish by it. The cause seems to be better understood than it used to be, and on many a pasture that had formerly obtained a fatal celebrity for rotting sheep, they may now feed securely, and yet almost as many die as ever. I shall, perhaps, be able to show the principal reason of this, and arouse my readers and agriculturists generally, to the adoption of more effectual preventive measures.

The symptoms of the rot in the early stage are exceedingly obscure. There is little to indicate the existence of the disease even to the most accurate observer. This is one cause of the mischief that is done; for it prevents the malady from being attacked when alone it could be conquered. The earliest symptom is one that is common to a great many other diseases, and from which no certain conclusion can be drawn, except that the animal is ill, and labours under fever; the sheep is dull, he lags behind in his journey to and from the fold, and he does not feed quite so well; but this is as much an early symptom of the staggers as it is of the rot.

This, however, goes on some time, and then a yellowness steals over the skin easy enough to be seen when the wool is parted, and most evident in the eyelids, and that which is generally called the white of the eyes, and which becomes of a palish yellow colour. The lips and mouth are soon tinged, but not to so great a degree. The sheep does not otherwise appear to be ill. If he does not eat much, he does not lose flesh; on the contrary, he seems to gain condition, and that for several weeks. Graziers were taught this by Mr. Bakewell. He found that he could save a fortnight more in fattening his sheep for the market by giving them the rot; and he used to keep a wet piece of ground expressly for this purpose, and on which he regularly turned the sheep that he destined for the butcher. This may be a useful hint for those farmers who have too much of this disease every winter. It may be hard to be compelled to part with some of the best of their flock, but if they are watchful they may get rid of the greater part of them without any very serious loss. The farmer, however, is not watchful enough, and he, often, will not believe that his sheep have the rot until the conviction is forced upon him by the loss of some of his flock, and the wasting condition of many more.

This thriving period soon passes over, and the sheep begin to waste much more rapidly than they had acquired condition. First there is a perceptible alteration in the countenance,—a depressed unhealthy appearance, accompanied by increased yellowness. The tongue especially now becomes pale and livid. The animal is feverish; the heat of the mouth, and the panting, and heaving of the flanks, and general dulness, sufficiently indicate this. Some degree of cough comes on, some discharge from the nose, or, if not, the breath stinks abominably. The sheep is sometimes costive, at other times it purges with a violence which nothing can arrest, and the matter discharged is unusually offensive, and often streaked with blood. And now the soft mellow feel of the sheep in condition is no longer found, but there is an unhealthy flabbiness; even when there is but little left between the skin and the bone, there is a flabby feeling—a kind of *pitty* feeling—the parts give way, but they have lost their elasticity, they do not plump up again, and there is also a crackling sound when the loins or back are pressed upon. The farmer knows what this is, and what he is to expect, both in the sheep and the ox: very few of them recover after this crackling has once been heard.

At an uncertain period of the disease the sheep usually become what the graziers call *chockered*, that is, a considerable swelling appears under the chin. If this is punctured, sometimes a watery fluid escapes, and sometimes matter; and occasionally I have known the swelling burst, and an ulcer very difficult to heal has followed.

The bowels, which are variable at first, become at length very relaxed. A fœtid purging comes on of all colours, and which nothing can stop.

The wool begins to fall off in patches; it is loose all over the animal, and easily pulled off, and there is a white scurfiness adhering to its roots. The disease now rapidly proceeds, and while the sheep loses flesh every day, and every rib, and every bone of the back can be plainly felt, his belly increases—he gets dropsical. The end is not then far off.

The progress of the disease is more or less rapid according to the violence of the attack, or the strength or weakness of the sheep, or the care which is bestowed on him, or the utter neglect to which he is abandoned. I have known the animal die in two months from the first evident symptom of rot, but usually four or five or six months elapse before the animal is perfectly exhausted.

The farmer is not much accustomed to examine his sheep after death. It would be better for him if he paid more attention to this, for he would discover the nature, and probably the cause of many a complaint that is committing sad ravages in his flock. The appearances exhibited in the sheep that has died of the rot are very singular. There appears to be dropsy, not only in the belly, but all over the animal. Wherever the knife is used a yellow watery fluid runs out; and the consequence of the existence of this fluid every where is, that the muscles, and that which should be firm, honest fat, are yielding, and flabby, and unwholesome. When the belly and chest are opened, the heart is pale, and soft, and flabby, and often to such a degree that we wonder how it could have continued to discharge its duty. The lungs are not pale, but more or less gorged with blood; and there are a great many hard knotty points (tubercles), on them, and some of them have probably broken, and the lungs are full of ulcers; or when this is not the case they are studded with innumerable little knotty points of a dark colour.

The principal disease, however, is in the liver, which is much enlarged, often of double its natural size, broken down by the slightest touch, sometimes black from inflammation and congested blood, and at other times of an unhealthy lividness; but that which is most remarkable is, that its vessels are filled with *flukes*, curiously-shaped things like *little soles*, which are swimming about in the bile in every duct, and burrowing into every part of the liver. Hundreds, and even thousands of them are sometimes contained in one liver. A few of them may occasionally be found in the upper part of the intestines, but there only.

I have seen the upper part of the liver speckled like the body of a toad; indeed this has been so often remarked, that the examiner, if he does not find flukes, and sometimes when he does, looks out for the toad's liver. A curious circumstance is said to take place in the cooking of this liver. If any attempt is made to boil it, instead of becoming hardened, it falls all to pieces, or is in a manner dissolved. Abscesses are oftener found in the liver than in the lungs, and to an extent sufficient to destroy the sheep without any other cause. At other times there are knots in the liver as well as in the lungs—small roundish, hardened lumps—and, in a few cases so numerous, that it is almost impossible to find a sound part.

If the farmer would accustom himself to observe these things, and carefully examine every sheep that dies in the autumn, he would sometimes detect the existence of this disease in his flock before he would otherwise have been aware of it, and may, perhaps, be enabled to take advantage of the falling period of the rot, if he should not succeed in his medical treatment of the infected sheep. Nay, he should not confine his examination to this, but should observe the appearance of the inside of every sheep he may kill for the use of his family about that time. It should be a practice never omitted, and however seemingly healthy the animal may die, whatever quantity of suet may cover the kidneys, if the liver is dappled with white spots, or if the vessels of the liver are thickened, and if there be flukes, however small, floating about in the bile, that sheep was certainly rotted; and if one sheep is rotted, the whole will follow. Aware of this, and at this early period of the disease, the grazier may, either by hastening the fattening process, or shift-ing the pasture, or adopting medical treatment, put many scores of pounds into his pocket, which would otherwise be irrecoverably lost.

This examination of the sheep will lead us to the principal and primary seat of the disease, namely, the liver. What is the cause of this affection of the liver is another question, and a very important one. There is a dispute which no one has yet settled, whether this fluke worm is the cause or the consequence of the disease. I am very much inclined to think that it is the consequence, although it may and does much aggravate the disease. These parasitical animals, both in the animal and vegetable kingdoms, fasten upon a part that is diseased, a part the vitality of which is weakened, and which is no longer sufficient to throw them off.

Another disputed point is the source of these flukes. Are the eggs taken up in the herbage? Does some insect or fly, that is a fluke in one part of his existence, lay his eggs on plants growing in wet pastures, or by the side of stagnant water? We have no proof of this, and we never saw the fluke in any other form. Therefore, it is useless to dispute about that which cannot be resolved. The most probable thing, however, is, that the eggs, whence the fluke is produced, are, like the eggs of many animalculæ, floating in the air so small and pellucid as to be invisible to us; that they are inhaled with the breath, or received with the food, but only find a proper nest, a proper place to be hatched into life, in the liver of a sheep labouring under the rot.

These flukes are occasionally found in the livers of almost every domestic quadruped, but so far as it has hitherto appeared, they are in all of them connected with disease.

Well then, what is the cause of this affection of the liver? It is evidently connected with moisture, although it may be difficult to trace the connexion between this moisture and a diseased liver.

The history of the rot is plain enough here. It prevails, or rather it is only found in boggy, poachy ground. On upland pasture, with a light, sandy soil, it is never seen; and in good sound pasture, in a lower situation, it is only seen when, from an unusually wet season, the pasture becomes boggy and poachy. It is also proved to demonstration, that land that has been notoriously rotting ground, has been rendered perfectly sound and healthy by being made dry, that is, by being well under-drained. There are hundreds of thousands of acres on which a sheep, forty years ago, could not pasture for a day without becoming rotten, that are now as healthy as any in the kingdom.

We can also tell the kind of wet ground which will give the rot. Wherever the water will soon run off there is no danger; but where it lies upon the surface of the ground, and slowly evaporates, the rot is certain. One part of a common shall be enclosed; or if it has not been drained, at least the hollows in which the water used to stand are filled up and the surface is levelled. No rot is caught there; but on the other side of the hedge there are these marshy places, these little stagnant ponds, where evaporation is always going forward, and the ground is never dry. A sheep cannot put his foot there without being rotted. These are plain, palpable facts, and they are sufficient for the farmer's purpose, without his puzzling his brains about the manner in which wet ground produces diseased liver.

He may be assured that it has nothing to do with the animal's feeding on stimulating or poisonous herbs. It has nothing whatever to do with the food. It depends on the wetness or dryness of the pasture.

How is it then that when so great a part of the country is underdrained, the rot should continue to be almost as prevalent as ever? Why is it not so prevalent where the ground has been properly underdrained? There are fields in every well managed farm in which the rot is never known. There are others in which it still continues to depopulate the flock.

The draining may not be equally effectual in both. It might have been carelessly, superficially performed in the one case; or the soil of the two pastures may be very different. The one may be light and porous, and a little draining may effect the purpose; the soil of the other may be heavy and tenacious, and drains not more than a yard asunder would scarcely keep it dry. What is more to the purpose, but less thought of, there may be little nooks and corners in the field that have not been underdrained. A few minutes' trampling upon them will be fatal to the sheep, and one or two of them upon the whole farm will render all the labour bestowed on every other part absolutely nugatory.

It is surprising how soon the animal is infected. The merely going once to drink from a notedly dangerous pond has been sufficient; the passing over one suspicious common in the way to or from the fair, the lingering only for a few minutes in a deep and poachy lane. Then it can easily be conceived what mischief one or two of these neglected corners, in which there may be little swamps but a yard or two across, may do in a farm in other respects well managed, and perfectly free from infection.

The affection of the liver terminating in, or constituting the rot, is then dependent on moisture, and that retained for a certain time on the surface of the ground, so that the process of evaporation may have commenced, and likewise, probably, the decomposition of the vegetable matter growing on the surface.

If sheep breeders would get more in the habit of having oxen to turn upon the aftermath of their low and dangerous pastures, instead of venturing so frequently to send their sheep there, because they cannot afford to lose that portion of the crop, they would not suffer the grievous losses which sometimes almost break them down.

The preventive, then, seems plain enough. On good sound ground the sheep need not fear the rot; and other stock should be on the farm to pasture on the suspicious or dangerous places. The draining should be effective where it is attempted, and no nook or corner should escape.

Can any thing be done by way of cure? I am inclined to think that there may, and a great deal more than the farmer imagines. All, however, depends upon the *stage* of the disease. The liver may be inflamed, but it must not be disorganised; it must not be tuberculated or ulcerated; and the flukes must not have burrowed too deeply into it. The farmer, from habitual observation of his flock, must have discovered it at the very commencement of its attack, or he must have been made aware of it by the examination of some sheep that died, or that had been slaughtered for the use of his family. Then he may do good. Good is often done without his help. A succession of dry weather will often stop, or at least retard the ravages of the rot. If moisture be the cause of it he must remove that cause. He must change the pasture, and drive his flock to the driest ground his farm contains; and beside this, he must give a little dry meat;—a little hay. Some have advised to feed the suspected sheep altogether on hay. This is carrying the matter a little too far; for in the prime of the season the sheep will pine for the grass, and rapidly lose condition for want of it. A change to a thoroughly dry pasture will sometimes do wonders. At all events, it is worth trying. The animals must, however, be carefully watched, and if it is not evident that the disease is giving way, from their more cheerful countenance and manner, and the diminution or disappearance of the yellowness, advantage must be taken of their present condition, and they must be turned over to the butcher. Let the farmer at least do something; let him either sell them at once, reckoning, and generally rightly, that the first loss is the least; or let him set to work and endeavour to combat the disease; but do not let him stand with folded arms, and suffer the best of his flock to dwindle away one after another.

As for the medical treatment of the rot in sheep, there are a great many nostrums, but few, if any, have stood the test of extensive experience. This has partly arisen from a cause at which I have already hinted, the disease not being recognised or attacked before it has made much inroad on the constitution, and when, or perhaps when alone, it will yield to medicine. But I believe that with regard to the fairest cases every medicine has occasionally failed, or failed almost as often as it has succeeded. We must in no case despair: the disease has sometimes been suspended, and the sheep has recovered. Let not, however, the practitioner be deluded into the use of calomel, or blue-pill, or any preparation of mercury, because the rot is an affection of the liver. Mercury does not seem to agree with the herbivorous animals in any form, or for any disease. I have seen it do much harm; I have known many animals destroyed by the use of it; but I do not recollect a single case in which it was of service.

There is, however, a drug, or, rather, a very common and useful condiment, which I believe has entered into the composition of every medicine by which this complaint has been successfully treated, I mean *common salt*. The virtues of this substance are not sufficiently estimated, either as mingled with the usual food, or as an occasional medicine. All herbivorous animals are fond of it. It increases both the appetite and the digestion. Cattle will greedily eat bad forage that has been sprinkled with it, in preference to the best fodder without salt, and it seems now to be a well ascertained fact, that domesticated animals of all kinds thrive under its use, and are better able to discharge the duties required from them.

The consideration of this induced the use of salt in various complaints, and especially in the rot, which is an affection of one of the most important of the digestive organs; and it has not deceived the expectations that were raised as to its sanative power.

As, however, the rot is a disease accompanied by so much debility and wasting of flesh, as well as of strength, tonics and aromatics are usually mingled with it; but first of all the bowels are evacuated by some of the usual purgatives, and the Epsom salts are the best. The following prescription should then be tried:—

RECIPE (No. 10.)

Mixture for the Rot.

TAKE—Common salt, eight ounces;
Powdered gentian, two ounces;
Ginger, one ounce;
Tincture of Colombo, four ounces:

Put the whole into a quart bottle, and add water so as to fill the bottle.

A table-spoonful of this mixture should be given morning and night for a week, and then the following mixture may be given at night, while the former is continued in the morning, and by which the flukes will be destroyed, as the worms in the bronchial tubes sometimes are in the hoose of young cattle.

RECIPE (No. 11.)

Second Mixture for the Rot.

TAKE—Of Recipe No. 10, page 268, a quart;
Spirit of turpentine, three ounces:

Shake them well together when first mixed, and whenever the medicine is given. Two table-spoonfuls are the usual dose.

The morning dose should be given on an empty stomach, and the evening dose before the night's feed is given if the animal is housed.

All the hay should be salted, and some have recommended that even the pasture should also be impregnated with salt. This is easily managed. Select a little plot of ground, or a portion of a field hurdled off, and scatter salt over it as equably as possible, in the proportion of ten bushels to an acre. Three weeks afterwards turn the sheep on it to grass, stocking the ground after the rate of ten sheep to an acre; and brine in the same manner the field from which they are taken. When they have eaten the grass quite close change them back to the other plot, and so on as often as may be necessary, strewing at each change five bushels of salt per acre on the pasture. The sheep will fatten at a rapid rate if the disease is not too much advanced, and the disease will sometimes be arrested even in the worst cases.

I must, however, confess, that although I have often saved sheep from the rot by the use of salt, I have rarely been able to restore them perfectly to their former health. The taint is left; they are more disposed to receive the infection from a slight cause; and, six or twelve months afterwards, they have died of hoose, or inflamed bowels; therefore, I would recommend that they should be fatted as soon as possible, and sold to the butcher: he will always tell by the appearance of the liver whether the sheep have ever been rotted. In some few cases lambs have been procured from ewes thus cured, for one or two seasons, but they have seldom lasted longer than this.

SECTION XI.

THE FOOT ROT.

Although this disease resembles the last in name, it is altogether different in character. It is not so fatal as the liver-rot, but it is sadly annoying; it is of very frequent occurrence, and it seems to be increasing.

It is, like the rot, peculiar to certain pasture; but there is more variety in this than is found with regard to the rot. There we must have stagnant water, and the process of evaporation going forward. For the production of the foot rot we must have *soft ground*, and it does not seem much to matter how that softness comes about. In the poachy and marshy meadow, in the rich and deep pasture of the lawn, and in the yielding sand of the lightest soil, we must not say that it is almost equally prevalent, but it is frequently found. Soft and marshy ground is its peculiar abode. The native mountain sheep knows nothing about it; it is when the horn has been softened by being too long feeding in contact with some rich and moist land, that the animal begins to halt. This softness is connected with unnatural growth of horn, and with unequal pressure; and the consequence is, that some part of the foot becomes irritated and inflamed by this undue pressure, or the weakened parts of the horn too rapidly and unevenly growing are broken off, and corroding ulcers are produced. Although there would not appear to be any great wear and tear of the foot on this soft land, yet the horn becomes so exceedingly unsound and spongy, that small particles of sand or gravel make their way through the softened mass, and reach the very quick. The hardness or the sponginess of the horn depends altogether on the dryness or moisture of the soil in which the animal has fed.

The first symptom of the disease is the lameness of the sheep. On the foot being examined, this morbid growth is almost invariably found. The foot is hot, and the animal shrinks if it is firmly pressed. It is particularly hot and painful in the cleft between the two hoofs; and there is generally some enlargement about the coronet. There is always an increased secretion, usually fetid, and often a wound about the coronet discharging a thin stinking fluid: sometimes there is a separation of the horn from the parts beneath, and that too frequently preceding the dropping off of the hoof. In comparatively a few cases the hoofs seem to be worn to the quick at the wound, and the wound is at or near the toe. The lameness rapidly increases to such a degree indeed, that the sheep is unable to stand, but moves about the field on his knees. I have known portions of the foot rot off from the rest.

All this is necessarily attended by a great deal of pain, and the animal shows how much it preys upon him by his moaning, and refusing to eat, and ceasing to ruminate, and most rapidly wasting. Irritative fever comes on, and after the poor creature has crept about the field on his knees for a few weeks, it dies from irritation and starvation.

Of one thing the farmer may be assured—that the foot rot is exceedingly infectious. If it once gets into a flock it spreads through the whole. Some valuable writers have denied this; but there is scarcely a farmer who has not had woful experience of the truth of it. Even on the driest soil the greater part of the flock have become lame in a very few weeks after a diseased sheep has come among them. There are some instances in which a sheep with foot rot has grazed among others for months, and no disease has ensued; and some curious experiments would make it appear that under particular circumstances it is difficult to produce foot rot by inoculation. But these are exceptions to the general rule; and he who trusts to the non-contagiousness of foot rot will suffer as assuredly as the man who, deluded by some of the mischievous theories of the day, believes that he may keep a glandered horse in his stable with impunity.

The treatment of foot rot is simple enough, and in the early stage of the complaint usually successful. The foot must be carefully examined, and every portion of horn that has separated from the parts beneath thoroughly removed, and the sore lightly touched with the butyr (chloride) of antimony, applied by means of a small quantity of tow rolled round a flat bit of stick, and then dipped into the caustic. If a fungus is thrown out at the place where the horn separates from the foot, it must be first cut away with the knife, and then the root of it touched also with the caustic. There will seldom be necessity for binding the foot up; indeed, the animal will generally do better without it. It will be seen by the altered colour of the part whether the caustic has been applied with sufficient severity, and the dry surface which will be formed over the sore will protect it from all common injury better than any covering.

To these must be added that reasonable and successful practice of removing the sheep to higher ground. Sheep among whom the foot rot is beginning to appear are sometimes completely cured by being driven to higher and drier ground. Some farmers, and with a great deal of advantage, have their flocks driven four or five times daily along a hard road. They thus accomplish two purposes—they wear away the irregularly formed horn, the unequal pressure of which has irritated and inflamed, and the remaining horn is hardened, and enabled better to resist the influence of the moist or soft ground. Where the ulceration is extensive, means must be adopted similar to those recommended for the treatment of *foul in the foot* in cattle, but in most cases it will be more profitable to the farmer to destroy the sheep with *bad* foot rot if it is in tolerable condition, rather than rely on a cure which is uncertain, and during the progress of which the animal very rapidly loses flesh and fat.

If, however, he is determined to attempt a cure, let him wash the foot well from all grit and dirt, and then cut off every loose and detached piece of horn, and every excrescence and fungus, and cover the wound with the following powder :—

RECIPE (No. 12.)

Caustic Astringent Powder for Foot Rot.

TAKE—Verdigris ;
Bole armenian ; and
Sugar of lead, equal parts :
Rub them well together, until they are reduced to a fine powder.

This should be sprinkled over the sore, and a little dry tow placed upon it, and bound neatly and firmly down with tape. The animal should afterwards stand in a dry fold-yard for four-and-twenty hours.

On the next day the tape should be removed, and if the surface is tolerably regular, it may be touched, as already directed, with the butyr of antimony; but if any fungus remains the powder should be applied another day. The fungus no longer continuing to grow, a light dressing with the butyr should be continued every second day until the animal is well. Some prefer a liniment or paste to the powder, and it is made by mixing the powder with a sufficient quantity of honey. The farmer may use which he pleases: but a firm and equable pressure being produced by the tape is the principal thing to be depended upon.

The farmer will as carefully avoid the ground which produces foot rot, as that which causes the fatal affection of the liver; and he will attempt the same method of altering the character of the low and moist ground by good underdraining. The effect of this, however, is far from being so certain and beneficial as with regard to the rot. The water which would stagnate on the surface may be drained away with tolerable ease, but the soil cannot be rendered hard and dry, or, if it could, it would not be an advantageous change. The sheep might not have the foot rot, but the ground would be comparatively unproductive.

If the farmer intends to drive his sheep a considerable distance to the market or fair, he will prepare them for the journey by a few days' removal to harder and firmer ground, and perhaps by driving them a short distance daily, on the still harder public road.

The farmer should not only take his sheep from light sandy soil in long continued dry weather, because they would starve there, but because then alone that soil would give them the foot rot: its yielding nature would not sufficiently keep down the growth of horn, and many a particle of sand would insinuate itself into the soft and spongy horn, and produce inflammation. For the same reason he should avoid dry old pasture at the season when the dews are heaviest, because then moisture would most abound there.

In grounds that are disposed to give the foot rot, the farmer would find it advantageous to have the hoofs of his sheep rasped or pared once every fortnight or three weeks. This is not often done, but it appears reasonable, and would not be very expensive. In uninclosed or mountainous countries, where the sheep have particular tracks, gravel might be scattered in sufficient quantity to wear and harden the horn.

SECTION XII.

THE SCAB.

THIS is a most troublesome and infectious disease, and generally to be attributed to bad management. Sheep that have been too much exposed to the inclemency of the weather, or that have been half-starved, and thus debilitated, are most subject to it. The forest sheep are particularly liable to the scab. It is first discovered by the animal eagerly rubbing himself against every post, or gate, or bank, or, if the itching is very great, tearing off his fleece by mouthfuls. He looks thin and ragged; and if he is caught, there will appear on various parts, and particularly along the back, either little red pimples, or a harsh, dry scurf. The pimples speedily break, and this scurf succeeds. The roots of the wool are matted together by it, and portions of the fleece come off with almost the slightest touch.

No one ever doubted the infectiousness of this disease, or suffered a scabbed sheep to enter his flock without dearly rueing it. Every post, or stone, or tree, against which it has rubbed itself, seems to be empoisoned. Every sheep that comes in contact with it is infected. The itching of the eruption preys upon the sheep almost as rapidly as the foot rot. A scabbed sheep is a poor hungry looking, half-starved creature; his fleece is spoiled, and he is useless for the butcher.

Sheep proprietors used to be fond of various lotions for the cure of scab. Some applied a strong solution of tobacco, others a solution of sal ammoniac, and others one of corrosive sublimate. If these are ever used they should not be made too strong, for many an animal has been destroyed by them all. Not more than a quarter of a pound of tobacco should be boiled or infused in a gallon of water, nor more than an ounce of corrosive sublimate, and which is previously dissolved either in muriatic acid or spirit of wine. The sal ammoniac rarely did much harm, but on the other hand it more rarely did good, and when used with the corrosive sublimate seemed to impair its powers. There are those who have preferred a solution of arsenic to either of the others. It is as efficacious as any of them, but it is by far the most dangerous.

A great tub or vat used to be procured, and half filled with either of these solutions, and the sheep put into it one by one, and well rubbed and washed until the fluid had evidently penetrated the fleece, and come into contact with every part of the skin; but even where these lotions succeeded, they gave a peculiar coarseness and harshness to the wool which very much decreased its value. The scurfiness likewise did not soon come off, or when it did patches of the fleece separated with it, and left the skin beneath it red, and chapped, and ulcerated.

An ointment is far preferable, for it softens the scurf, and detaches it from the wool, and saves the fleece, and heals the chaps and ulcers of the skin, and promotes the future growth of the wool.

The mercurial or blue ointment in a greater or less degree of strength is commonly used, and if used with caution, the real strength of it being previously ascertained, it has generally a good effect;

but when bought from too many druggists the quantity of mercury is so variable, and so many tricks are played with it, that the shepherd scarcely knows how to use it, and too often salivates, and even destroys some of his sheep.

If the mercurial ointment is to be used it will be of advantage to the farmer, especially if he has many scabbed sheep, to make it himself, and that he may very easily do if he has a wooden pestle, and a large mortar, or iron pot.

RECIPE (No. 13.)

Mercurial Ointment for Scab.

TAKE—Crude quicksilver, one pound;
Venice turpentine, half a pound;
Spirit of turpentine, two ounces.

These should be well rubbed together for five or six hours, until they are perfectly united; and that will be known by a little being taken and rubbed with the finger on a piece of glass. If not the slightest globule can be detected, the *killing* of the mercury is complete; but if the smallest shining particle can be seen, the substances are not sufficiently mixed. When this is completed, four pounds and a half of lard should be taken, and the more rancid the better; for then it more readily combines with the mercury, and gives it additional power. This lard may be well rubbed with the mixture of mercury and turpentine on a square slab of marble, or it may be melted, and when about the temperature of new milk, added to the other ingredients, and the whole stirred together until the ointment becomes stiff.

If the ointment is made during the summer, it will perhaps be too fluid to be thoroughly rubbed into the sheep. It may run among the neighbouring wool or run off and be lost. Then at this season one pound of the lard should be omitted, and a pound of black resin substituted.

A great deal depends on the manner in which the ointment is applied. It should extend to every part that is in the slightest degree affected, and it should be well but gently rubbed in. The wool should be carefully parted on the middle of the back, from the poll to the tail, and a little of the ointment rubbed in all along the channel thus exposed. If the disease is slight, another furrow may be made on either side, at the distance of two or three inches, and more rubbed in; but if it appears to be inveterate the divisions should be made at two inches distance from each other, and over every part that is affected. A second dressing may be applied four days afterwards if the sheep continues to rub itself, but it would not be safe to proceed farther. If the sheep should yet rub, a milder ointment should be resorted to, which may be repeated every second day with perfect safety until the animal is cured. Indeed I should be very much disposed to use the milder ointment from the beginning, because I could go on to the very end, without any fear of unpleasant consequences; and although the cure is effected more slowly, the process is safer and surer.

RECIPE (No. 14.)

Mild Ointment for Scab.

TAKE—Flowers of sulphur, a pound;
Venice turpentine, four ounces;
Rancid lard, two pounds;
Strong mercurial ointment, four ounces:
Rub them well together.

Flowers of sulphur must be used, and not the common black sulphur; that is the refuse of the sulphur, and is almost inert, except it derives any power from the arsenic which is generally in combination with it, and that would be a dangerous power. I have known two or three animals destroyed by the use of the black sulphur in ointment, and which had been empoisoned with arsenic.

This ointment may be used at any time of the year; the mercurial ointment is not safe in cold or wet weather.

Prevention is here again better than cure, and the practice of smearing, and especially in cold and exposed situations, is very commendable. It is not a certain preventive, but it renders the animal less likely to take the infection, and it is very comfortable and useful to the sheep in protecting him from the cold, and hindering the wet from penetrating to his skin.

RECIPE (No. 15.)

Smearing Mixture:

TAKE—A gallon of common tar; and
Twelve pounds of any sweet grease:
Melt them together, stirring them well while they are cooling.

Here, as in dressing for the scab, the wool is parted in rows from the head to the tail, three or four inches asunder, and the mixture is rubbed carefully with the finger at the bottom of each row. The smeared fleece will not fetch so much per pound, but the increase of weight, generally in the proportion of five to four, will more than compensate for the diminution in price. The usual time for smearing is in October, and the sheep are hardier and warmer, free from vermin, and generally free from scab; and this being the case they evidently thrive better, are sooner fit for the market, and weigh heavier.

It will be evident enough that every precaution ought to be taken to prevent the re-appearance of this disease. Every rubbing-place of every kind should be thoroughly washed with chloride of lime, and every sheep that begins again to *ferret*, immediately separated from the flock.

The scab appears under an exceedingly virulent form in some mountainous parts of the country, and particularly in Scotland. Mr. Stevenson, in his communications to the Highland Society, thus describes two varieties of it. The first he curiously calls *redwater*, an improper term, and more especially as the same name is given to that discharge of bloody urine to which sheep are so subject. He says, "This disease commonly makes its appearance about the beginning or end of winter, and first affects about the breast and belly, although at times it spreads itself over other parts of the body. It consists in an inflammation of the skin that raises it into blisters, which contain a thin, reddish, and watery fluid; these continue for a short time, break, and discharge their matter, and are followed by a blackish scab.

"When the sheep are exposed to cold or wetness, the skin being fretted, makes the blisters rise; or they often arise from cold affecting the animal internally, thus producing a slight fever, which throws out these vesicles on the body."

The diseased sheep should be put into a fold by himself. A little blood should be taken, and the blisters slit up, and a few drops of the infusion of tobacco put into them, and a quarter of an ounce of sulphur given on six successive mornings. A dose of physic should follow. The parts affected should be daily washed with lime water.

A more violent eruption is called the *wildfire*, probably from the rapidity with which it spreads. It is more infectious than the scab, or, probably, it is one of the worst species of scab. The nitre and sulphur should here also be given internally, and the lime water applied externally.

SECTION XIII.

LICE, TICKS, AND FLIES.

Sheep, and especially if they are neglected and poor, are often sadly annoyed by these vermin. They frequently precede the scab; the dreadful itching which they occasionally cause prepares for or produces the scab, or they multiply most rapidly when the skin is fouled by the scab. The sheep-louse is too well known to every shepherd, of a brownish or reddish colour, and flat body, with three legs on either side; and also the tick with his large round body, and small chest and head, which he buries deep into the skin, and holds so fast as to be with difficulty torn off. The lice are propagated by means of eggs or nits: the origin of the tick is not so well understood.

They are both injurious to the wool, and also to the health of the animal from the constant irritation they produce. The louse is more injurious than the tick. The tick only buries his head in the skin; the louse burrows, and forms his nest in or under it. They collect together, and a scab soon rises, whence a glutinous matter proceeds. The scab continues to increase until it is the size of a sixpence, and undermines and destroys the roots of the wool, and the fleece comes off in patches. The sheep rub themselves eagerly against every thing within their reach, and tear off the wool by mouthfuls. The lice are thickest about the throat and under part of the neck, and it has sometimes happened that the sheep has been thus seriously injured, or even destroyed in a very curious way. He bends his head down as closely as he can to get at the vermin, and then some of the wool entangling itself about the teeth, the head becomes fixed, and the animal is said to be *bridled;* and thus, if he is not observed and relieved, the head will be held until the muscles are seriously injured, so that he can no longer comfortably bend his neck to graze, or until he is absolutely destroyed.

Many washes have been invented to destroy these insects, but few of them have perfectly succeeded. That which seems to have the best effect is thus composed:—

RECIPE (No. 16.)

Arsenical Wash for Sheep Lice.

TAKE—Arsenic, two pounds;
Soft soap, four pounds:
Dissolve in thirty gallons of water.

The infected sheep should be immersed in this, the head only being kept out, and while he is in the liquid the fleece should be well rubbed and moulded, so that the wash shall penetrate fairly to the skin. When taken out of the tub the fluid should be pressed as thoroughly as possible out of the fleece, and which will then do for another of the flock, and the sheep should be kept from cold and wet for a few days.

Other persons prefer the following lotion :—

RECIPE (No. 17.)

Mercurial Wash for Sheep Lice.

TAKE—Corrosive sublimate, one ounce ;
Spirits of wine, two ounces ; rub the corrosive sublimate in the spirit until it is dissolved, and then add—
Cream of tartar, one ounce ;
Bay salt, four ounces :

Dissolve the whole in two quarts of water, and apply a little of it with a small piece of sponge wherever the lice appear.

These washes, however, are not always safe, and they are very troublesome in their application. The ointment which I have recommended for the scab is more easily applied, and more effectual. It may be rendered more fluid, and consequently more easily rubbed in by being mixed with an equal weight of neat's-foot oil ; and it should be as carefully applied over every part as it would be in the act of smearing, for the vermin will collect and burrow in any spot which the ointment may not have reached.

The tick is many times as large as the louse, but not so frequently found. When not gorged with blood it is flat, but when bloated it is round, and brown or black, and varies in size from a pin's head to a small bean. When one of them fastens itself upon the sheep, it seems to retain precisely the same situation for some weeks, or even months, and yet the young ticks are found round the old ones, resembling numerous red points, but becoming brown as they increase in size. They, too, select the sheep that is debilitated by want of proper nourishment, or by disease.

The tick is more frequent on some grounds than on others. On some farms, even although badly managed, it is seldom found, on others it is scarcely to be got rid of, even although the sheep should be healthy. It would seem as if it were bred on the ground, and one part of its existence alone were spent on the sheep. Some shepherds set diligently to work, and pick them off. This, however, is an almost endless task. Others dress the sheep with turpentine, which usually destroys them; but the scab ointment is the surest remedy, as well as preventive.

The sheep is tormented by two species of flies. The one endeavours to lay its eggs on the muzzle, and thence, speedily hatched by the moisture and warmth of the breath, the animalcule, or larva, creeps up the nostril, and finds its way into the frontal sinuses, or some of the cells above the nose, and there fastens itself, and lives and grows, until it becomes a large worm; it then creeps again down the nostril, assumes the form of a grub, burrows in the earth, and in due time appears again in the form of a fly. It is only during the time of the depositing of the egg that the sheep is disturbed or injured, and then they may be seen huddling together on the barest part of the pasture, with their noses close to the ground, and by continual shaking of the head and stamping, endeavouring to prevent the depositing of the egg. When the little worm has reached its destined situation, it seems no longer to trouble the animal, and these *bots* are found in the heads of some of the largest and fattest sheep. This is the destined place of this worm, and nature would not make it destructive, or even much annoying to the animal by which it was to be supported.

Another species of fly, or perhaps several species, are far more troublesome and injurious. At some uncertain time after shearing, and seemingly oftener occurring to those early than later sheared, the sheep will be *struck with the fly*. This will be discovered by the uneasiness of the animal. It is not the itching of scab, for it is before the usual appearance of that disease, and when the sheep was shorn there was not the least appearance of it. The sheep will hang down their heads, stand for awhile as if listening, then bow up their backs, violently shake their tails, stamp furiously with their feet, gallop away for a short distance, and then turn round and try to bite the affected part. The tail is evidently the part oftenest attacked.

On being caught there will probably be found little lumps or bladders on various parts, but particularly about the tail; and if these are pierced they will be found to contain numerous little maggots. If there are any sores about the animal made in the shearing, they will be full of maggots in different stages of maturity, and these vermin will crawl through the wool, over almost every part of the body.

In warm weather they are more annoying and destructive than could be easily imagined. I have seen them spreading from the root of the tail to the very head of the sheep, deepening every sore, eating even through the sound skin, and penetrating to the very entrails.

A sheep struck by the fly should not be neglected a single day, for the maggots will sometimes do irreparable mischief in a very short space of time. The wool should be cut off round the places where the maggots seem principally to prevail, and they should be carefully picked out; but this will not effectually destroy them; for many will crawl far away out of the reach of the looker. Some ointment or powder should be applied, which will, at the same time, heal the sores and destroy the maggot. This may be obtained in some of the preparations of lead. The following will be very useful:—

RECIPE (No. 18.)

Fly Powder for Sheep.

TAKE—White lead, two pounds;
Red lead, one pound; and mix them together.

While one man holds the sheep by the head, let another have a dredger or pepper-box containing some of the powder in his right hand, and a stick in his left; let him raise the wool with the stick near the tail of the animal, and draw it gently along the back as far as the head, scattering in the powder as he proceeds. Then let him dip his hand in some of the coarsest whale oil, and smooth down the wool, smearing the whole of the fleece with the oil. This will not only destroy the maggots, but prevent the future attack of the fly. There are few flies that will approach any thing that smells strongly of this oil; it would, therefore, be a good practice to smear the sheep with a little of it after shearing. No injury could possibly be done to the wool, but, on the contrary, its growth would be promoted.

If, however, the flies have made any deep wounds or ulcers, some of the powder should be mixed up with tar, and the ointment gently rubbed on the sores.

SECTION XIV.

SORE HEADS.

This is connected with, or often produced by, the striking of the fly, and especially in woody countries. Next to the tail, the head is the part most frequently and seriously attacked, and in defending themselves from their tormentors the sheep frequently strike their heads with their hind feet, until at length a considerable sore or ulcer is formed. No sooner is this done than the fly persecutes the poor animal with tenfold fury, anxious to lay its eggs on or near the wound; and the ulcer will sometimes spread so far and so rapidly as to be very difficult to heal, and even occasionally to destroy the sheep.

The first thing to be done is to procure a cap or covering for the head, which may be made of soft leather, or even of brown paper, if leather cannot be procured. It should be cut so as to protect the whole of the head, and yet not come too close to the eyes. Then an ointment must be made in the following manner:—

RECIPE (No. 19.)

Ointment for Sore Heads.

TAKE—Black pitch, two pounds;
Tar, one pound;
Flowers of sulphur, one pound:

Melt them in an iron pot over a very slow fire, stirring together the ingredients as they begin to melt, but carefully watching the compound, and removing the pot from the fire the moment the ingredients are well mixed, and before they begin to boil, for they will then rapidly swell to an extraordinary extent, and the whole will run over into the fire.

While this ointment is warm and soft it should be thickly spread upon the leather, and the cap fitted to the head. If this be done in the evening, when the fly begins to cease to torment the sheep, the animal will be quiet, and the ointment will gradually cool, and stick close to the head.

Some spread the ointment over the head without the cap, making a kind of charge, a little wool being scattered over the top of it; and if it should be too liquid for this purpose, it may be easily stiffened by the addition of a little yellow resin.

In some parts of Scotland there is another disease of the head that is speedily fatal. On some of the Grampians, and the hills of Galloway, if the sheep are suffered to rest for the night near the summit of the mountain, the head will become enormously swelled, and ulcers will break out, as if the animal had been bitten by some venomous reptile. The shepherds there call it the *head-ill.* A great portion of the scalp often comes off, and the animal generally dies. The cause is uncertain, probably the eating of some poisonous plant; the cure is comparatively rare, and the malady is kept from spreading only by removing the flock from these elevated and dangerous spots.

SECTION XV.

DIARRHŒA, OR PURGING.

THE full grown sheep is almost as subject to purging as is the lamb, but it is not so difficult to be cured, nor is it so fatal. A sheep can scarcely be turned into fresh pasture in the spring without beginning to scour, and especially when warm weather is succeeding to cold, and the grass shoots rapidly; but this in most cases is beneficial rather than injurious. It rouses the digestive organs to full and healthy action, and the sheep that scours a little when first turned into the meadow or on the marsh, is sure to thrive more quickly afterwards. The purging, however, must not be too violent, nor continue too long.

The looseness caused by feeding on young succulent grass seldom lasts more than a few days; but if it should continue longer, the sheep must be removed to inferior pasture, and a little hay allowed them if they can be induced to eat it; otherwise, some dry sound old seeds should be put before them, and the following powder given daily, or twice in the day, in good thick gruel:—

RECIPE (No. 20.)

Astringent Powder for Sheep.

TAKE—Prepared chalk, a quarter of an ounce;
Ginger, half a dram;
Catechu, powdered, half a dram;
Powdered opium, two grains:

Give this in a little gruel once or twice daily until the purging abates.

A favourite remedy with some farmers, but a very inefficacious one, is suet boiled in milk. Others give a very curious medicine; it consists of the lime dug out of an old wall, and mixed with tar. What good purpose the tar can answer I cannot possibly conceive, and the lime would be superseded by the prepared chalk recommended in the last recipe.

When the disease abates, the sheep must not be turned out again on their former pasture, but on the best old grass land which the farm will yield; and even then a little good hay and corn should be daily allowed them.

The farmer should be careful that he does not confound the consequence of diarrhœa with costiveness. When there is much mucous discharge it is very sticky, and it adheres to the wool under the tail, and glues it to the rump, thus forming a mechanical obstruction to the passage of the dung. The animal straining very hard, careless observers have supposed that he was costive, and have given him a strong dose of physic, and thus added fuel to fire.

There is but one form of the disease under which all hope is precluded, and that is when it is connected with chronic cough, or confirmed hoose. That animal may be patched up for a little while, but he will most assuredly perish.

SECTION XVI.

INDIGESTION AND DEBILITY.

BAD management, and that alone, causes the appearance of these complaints in the flock. When sheep have been over-driven, and excessively wearied; or ewes have had twins, and afterwards kept on scanty pasture, where there was not enough even for themselves; or have yeaned very early before there was any flush of grass; or during the winter have not been supplied with a proper quantity of hay or corn: in all these cases the sheep are apt to pine away. They do not seem to relish their food, but wander over the field picking a little here and there, the belly being tucked up and the back bowed.

The remedy for this is simple enough if the sheep has not been neglected too long. It is plain that the powers of digestion are weakened and suspended, and the object to be accomplished is to rouse them once more to their proper tone and action. A mild purgative should lay the foundation for this. Half the Purging Drink (No. 2, p. 232) may be given, and this followed up by tonics or stomachics. Some content themselves with giving a little good caudle for two or three successive days, and with general good effect, except that its sweetness is objectionable. The following will be preferable:—

RECIPE (No. 21.)

Tonic Drink for Debility.

TAKE—Gentian and powdered carraway seeds, of each an ounce;
Colombo and ginger, of each half an ounce:

Pour a quart of boiling water upon them, and let the infusion stand three days, being well stirred each day. Then pour off the clear liquid, and bottle it for use. Give a table spoonful, mixed with the same quantity of good ale in a little gruel daily.

Repeat the half dose of physic a week afterwards, and the sheep should be put on fresh and good pasture.

SECTION XVII.

BLINDNESS.

SHEEP are more subject to diseases of the eye that lead on to blindness than many who are most accustomed to them imagine. It is a singular circumstance, and not so well known as it ought to be, that if the eyes of a flock of sheep are carefully examined, half of them will exhibit either disease then present, or indications of that which existed at no very distant date.

Inflammation of the eye, which constitutes the commencement of the disease, may arise from various causes. Sheep driven fast to a distant market have suddenly become blind; those who have been chased about by dogs have at no great distance of time lost their sight, and especially if, in both cases, they were afterwards exposed in a damp and bleak situation.

At other times it seems to be an epidemic complaint. The greater part of the flock is suddenly afflicted with sore and inflamed eyes, and this particularly in the latter end of the year, and when the weather has been variable, yet cold and moist. Some have thought it to be infectious, but it is at least epidemic. A white film gradually spreads over the eyes, which are generally kept closed, while at first a watery fluid, and afterwards a thicker mucous matter, is discharged from them. The film grows thicker and thicker, until the whole of the eye is of a pearly whiteness. If proper means are adopted, and often if nothing is done, the eye begins to clear, usually beginning at the top of the transparent part, and gradually proceeding downward until the whole of the eye is clear again, with the exception of a diminutive spot or two, or a discoloration of part of the iris. A few, however, do not perfectly recover the sight of both eyes, and some remain blind either from the continuance of the opacity, or while the eye becomes clear, the optic nerve is palsied, the pupil does not dilate, and there is *gutta serena*.

The first thing to be done is to bleed from the vein at the corner of the eye. There will be the double advantage of bleeding generally, and of drawing blood from the inflamed part. The shepherd should take the sheep between his knees, and then placing the animal with his rump against a wall, he will have full command of him. If he now presses upon the vein with his left hand about two inches from the angle of the jaw, and opposite to the third grinder, he will see it rise as it descends from the angle of the eye, and runs along the cheek. He should bleed about an inch or rather less from the eye. Some shepherds recommend that the blood should be suffered to run into the eye, but this is a ridiculous notion. It must do harm rather than good.

Next give the Purgative Drink (No. 2, p. 232), and repeat it if necessary, in three or four days. No other medicine will be required.

No stimulating application should be made to the eye; it is too often the practice among shepherds, but it worse than uselessly tortures the poor animal; it increases the inflammation, and causes blindness where it would not otherwise have occurred. A drop or two of the vinous tincture of opium may be got into the eye, two or three times daily; or a tea-spoonful of laudanum may be added to a half pint of water, and the eyes frequently washed with it.

It will be quite time enough to think of stimulants if the eye should remain cloudy after the inflammation has subsided, and then the following is the strongest that can be permitted :—

RECIPE (No. 22.)

Lotion for Cloudiness on the Eye.

TAKE—Corrosive sublimate, four grains; rub it down with
Spirit of wine, half an ounce; and add
Water, a pint.

Although, perhaps, it would be prudent to send the sheep decidedly and confirmedly blind to the butcher, lest he should perchance be drowned in a ditch, yet it is pleasing to observe how well they shift for themselves, and what little harm comes to them. For the first few days they are awkward and confused, but after that they keep to their own walk, and take with the others, or even by themselves, the accustomed way home; and, what shames the selfishness and want of friendship among men, some one of the flock takes the blind sheep under his protection, and is always at his side in danger, and tells him the way that he is to go, by many a varied and intelligible bleat.

SECTION XVIII.

FRACTURES, WOUNDS, AND BITES.

IT is not often that the sheep gets a broken bone by any fault of his own, but the shepherd is sometimes a brutal fellow; if he is a youngster, he is too frequently designedly mischievous; and in struggling with the dog the leg has now and then been broken. The treatment of fracture below the elbow or the hock is easy enough. The broken limb must not be roughly stretched or handled, but the divided edges must be brought gently and as perfectly together as possible, and then some strips of adhesive plaister, or of pitch spread upon leather, wound round it. Over this splints should be placed, reaching a little beyond the joint above and below, and these confined with more plaister, or with waxed thread. A little lint or linen rag should be placed under the end of the splints, to prevent them from excoriating or injuring the part beneath. This being done, the leg should not be meddled with until the bandage becomes loose, which will be in about ten days. The splints must be replaced once, and at the expiration of another ten days the edges of the bone will generally be found to have united; the animal, however, should be kept for a little while longer as quiet as possible, and if the bone is not quite firm, the strips, without the splints, once more bound round it.

Sometimes considerable swelling will take place after the splints have been employed. They have been put on a little too tight, or they do not press equally. They should not, however, be taken off at once, for the bones beginning to unite may again be separated; but with a sharp and strong pair of scissars, two or three notches should be cut through the edge of the bandage above and below. This will generally afford sufficient room for the establishment of the circulation, and the subsidence of the swelling, without disturbing the fracture.

If it should be a compound fracture, that is, if a portion of the bone should protrude through the skin, either the setting of the bones must be deferred until the wound is healed, or the bandages must be so applied, that the wound can be readily got at for the purpose of dressing. This, however, is so difficult a matter, that it will be prudent to destroy the animal that has a bad compound fracture.

Sheep are far oftener subject to wounds than they ought to be, from the ferocity of the shepherd's dog, encouraged by his brutal master needlessly to worry the flock. Many a time have I seen them seriously lamed, and the ears almost torn from their heads. The proprietor of the sheep should never forgive wanton cruelty of this nature.

The treatment of wounds in sheep is very simple, and consists mostly in avoiding the burning irons and caustics, of which the farrier, and sometimes the shepherd, are too fond.

The first thing is to clean the wound thoroughly with a sponge and warm water, and to remove those parts of it which are much lacerated, or in a manner torn off. If it is a simple cut wound, and the edges of it are not far separated, all that will be necessary to be done will be to apply daily a little tincture of aloes, and to cover the part that the flies may not deposit their eggs on the sore. If it is a wide and gaping wound, the edges of it must be brought as neatly and accurately together as possible, and confined by one or two or more stitches passed through them with a crooked needle and waxed thread, and which the shepherd should always carry with him. The only dressing wanted even here will be the tincture of aloes, with occasional fomentations if there should be much inflammation; but the wound should be more carefully covered from the flies, either by a bandage or pitch plaister.

The sheep are occasionally bitten by vipers. I have no faith in the accounts which are given by some authors of the udders of the ewes being sucked by snakes. No one has ever seen the reptile thus employed; but bites from the viper do occur, and some sheep are thus destroyed. It is difficult always to discover the accident. When a sheep is lame the affected limb should be well examined, and at other times, if he is evidently ill, and the illness accompanied by local or general swelling, careful search should be made for the bite. The wound itself will be very small, but there will be swelling and heat about it, and a great deal of tenderness.

The best application is oil of turpentine, which should be well rubbed over and around the part, while a quarter of an ounce of hartshorn, and four ounces of sweet oil, may be given to the animal, and repeated in half an hour if the animal should continue to swell, or appear to be seriously ill. Some shepherds, when they suspect an accident of this kind, rub the part well with an onion, and I have no doubt with considerable service; the turpentine, however, is more effectual, and should be obtained as speedily as possible.

SECTION XIX.

GENERAL CAUTIONS.

I WILL conclude this account of the diseases and treatment of sheep with two or three general observations, which may be useful to the farmer as well as the veterinary surgeon.

It is an old maxim, and a most excellent one, that prevention is in every case far better than the cure; and I am perfectly assured that by a little attention, and the exercise of common humanity towards these useful and neglected animals, there need not be half the diseases, or scarcely a fourth part of the deaths that occur.

In the first place, the farmer should look more than he does to the actual state, and health, and comfort of his flock. Instead of riding or walking in among them every day, and in a manner making every animal pass muster before him, he frequently contents himself with looking at them from a distance, or perhaps he does not look at them at all for many a day. He deserves to be unfortunate who in the lambing season is not early and late among his ewes. Many a ewe is lost by rough handling; many more by not receiving the requisite assistance in difficult parturition; many a lamb is deserted by its mother; many a one palsied by lying on the cold wet ground, and many more for want of being frequently and carefully suckled.

The farmer alone will be induced by a regard to his own interest to take into due consideration many a circumstance connected with the season and the state of his flock, which would never enter into the mind of the looker, but on which the lives of the sheep depend. Many a lamb dies for want of a little shelter in an inclement season; but many more die when the winter is mild, and the spring is early. In the one case they die from cold and starvation; in the other from being in too high condition, and having too much milk. The looker will go on in the same regular way whatever be the state of the season; it is the proprietor alone who will have sufficient consideration to allow additional food and shelter in the one case, and in the other to stock as hardly as may be, before and during the lambing; to suckle, and feed, and shelter the weakly; and to keep back and prevent the suckling, and to milk the dam, and to stock hard when the lambs are thriving and the weather kindly; these are affairs about which the generality of lookers scarcely concern themselves, and into which the best of them will not enter so anxiously as the master.

The most important circumstance to be attended to at all times, and particularly at the lambing season, is shelter,—not confinement, but shelter from the searching north and east wind. There should not be a lambing field without a shed in it, or at least without some place surrounded with brushwood faggots on the north and east sides at least, if not all round, and into which the weakly lambs and ewes may be driven, and in stormy weather the whole flock may take refuge with manifest advantage.

Next in importance to shelter stands food. The animal may be stinted in his growth, and prepared for scab by starvation; but he may be inevitably destroyed by over feeding, or sudden change of food. The unhealthy seasons for sheep, putting the rot for a moment out of the question, are not the winter, when no grass grows, nor the summer, when it is all burned up, but the spring and the autumn, when there is plenty, and too much to eat. They contrive to live, if not to fatten in the two former seasons, but they perish from excess or change of food during the latter two.

There is one disease, however, which is caught, or the foundation for which is laid in the summer, and that is the rot; but from what has been stated with regard to that disease, a proper system of husbandry, and attention to little unsuspected, but most dangerous nooks and corners, would materially limit the ravages of this malady.

The grand fault in the management of sheep, and of all domestic animals, is, that the farmer pays so little personal attention to them, and pursues one undeviating course, the same that he learned from his father, whatever be the state of his flock, and whatever the state of the season; and to this must be added—the most absurd, and the most injurious of all—a spirit of fatalism; a submission, not without repining, but without an effort to avert them, to many and serious losses, which a little care and personal trouble might have prevented.

ON THE

DISEASES OF SWINE.

It is very lately that any persons have condescended to take into consideration the maladies of swine, and they are little understood. With the exception of the diseases of the skin, which are sometimes produced by neglect and starvation, they are attributable to over feeding, and to confinement in close and heated sties. The diseases that have been recognised are not numerous, but they are exceedingly fatal; and that fatality is increased by the difficulty of managing these unruly animals.

The most frequent disease, and as fatal as any, is—

INFLAMMATION OF THE LUNGS.

This complaint is known among the breeders and fatteners of swine by the term of *rising of the lights*. There seems to be a peculiar tendency in every disease of this animal to take on a highly inflammatory character. It is the consequence of the forcing system that is adopted in the fattening of the hog. It resembles the *blood* or inflammatory fever of oxen and sheep,—a general and high degree of fever produced on a system already strongly disposed to take on intense inflammatory action from the slightest causes. Every little cold is apt to degenerate into inflammation of the lungs in the fatted or fattening hog; and this is often so prevalent among all those that are subject to the same exciting cause as to be mistaken for an epidemic. There is no doubt that when it breaks out in a herd of swine, the greater part of them are sooner or later affected by it, and die. It is the cough or cold that is epidemic, but it is the plethora and inflammatory state of the animals that causes it to be so general as well as fatal.

The early symptom is cough. A cough in a hog is always a suspicious circumstance, and should be early and promptly attended to. The disease is rapid in its progress. The animal heaves dreadfully at the flanks, has a most distressing cough, which sometimes almost suffocates him, and refuses to eat. The principal guiding symptom will be the cough getting worse and worse, and evidently connected with a great deal of fever.

In many cases congestion takes place in the lungs, and the animal dies in three or four days; in other cases he appears for a while to be getting better, when there is a sudden relapse; a frequent dry husky cough comes on, there is little appetite, rapid wasting, and the hog dies in a few weeks evidently consumptive.

The first thing that is to be done is to bleed, and the best place, or almost the only place to bleed the hog, is from the palate. If an imaginary line is drawn from between the first and second front middle teeth, extending backward an inch along the palate, and the palate is there cut deeply, with a lancet or fleam, plenty of blood will be obtained. The application of cold water with a sponge will generally stop the bleeding without difficulty, or at least so far arrest it, that no harm will be done if it should continue a little while longer. An assistant will easily open the mouth sufficiently for all this by means of a halter or stout stick; but beyond this the swine is an awkward patient to manage. He will struggle obstinately against every attempt to drench him, and the inflammation may be aggravated by the contest. It will, therefore, be necessary in the majority of cases to endeavour to cheat him by mixing his medicine with his food.

Here we must recollect the nature of his stomach; it is not of that insensible character and difficult to be acted upon or nauseated as in the cow and the sheep, but approaching as nearly as possible to the structure of that of the human being; and we must adapt our medicine accordingly. Only a little variation, however, will be required. The emetic tartar must be omitted, or it would sadly vomit the patient. The following may be given:—

RECIPE (No. 1.)

Fever Medicine for Swine.

TAKE—Digitalis, three grains;
Antimonial powder, six grains;
Nitre, half a dram:
Mix, and give in a little warm swill, or milk, or mash.

In the greater number of cases the animal will readily take this; but if he is so ill that nutriment of every kind is refused, he must be drenched.

This may be repeated morning, noon, and night, until the inflammation is abated. Here a purgative should quickly follow, and we have those which are mild as well as effectual, and from which no danger can result. The Epsom salts may be given in doses of from one to three ounces, and they will communicate a not unpleasant or unusual flavour to his broth or swill.

This inflammation of the lungs in the hog rivals in the speed with which it runs its course, and its intensity and fatality, the *blood*, or inflammatory fever of oxen and sheep; therefore no time should be lost in adopting the proper measures, and the bleeding should be copious, and the medicine given in doses sufficiently powerful. When the disease lingers on, and the dry husky cough remains, and the animal is evidently wasting, medicine will be in a manner useless, and warmth and cleanliness, and food that has no heating quality, afford the only chance of cure.

APOPLEXY AND INFLAMMATION OF THE BRAIN.

In distilleries, and where many hogs are kept, and too well kept, this is a very destructive, and not unfrequent malady. If the swine have been carefully observed, they have been making more than usually rapid progress, but there has been at the same time a laziness, or heaviness, or stupidity, about them. A dose or two of physic would have removed this, and not have interfered with the fattening; indeed they would have thriven the better after it. If this, however, has been neglected, the swine will sometimes, in the act of feeding, or when moving across the stye, fall suddenly, as if struck with lightning. He will be motionless for some minutes, and then convulsions will come on, strong and dreadful; the eyes will seem protruded, the head and neck will swell, and the veins of the neck will be brought into sight, notwithstanding the mass of fat with which they may be covered. In the midst of his struggles the animal will be perfectly unconscious. In a few minutes probably he will be dead; or should he recover, he will be strangely exhausted, and some internal injury will be evidently done, so that he will afterwards be very sub ject to returns of these attacks either of apoplexy, or of fits.

The course here is plain enough. He should be bled, and bled copiously. Indeed the blood should be suffered to flow as long as it will. Two or three ounces of Epsom salts should then be given; the quantity and the heating character of the food diminished, and a couple of drams of sulphur given daily in the first meal.

When this has once appeared in a stye it spreads like wild-fire. There is nothing contagious in it, but there is the power of sympathy acting upon animals rendered too disposed to inflammation and fever. The most forward of them should be disposed of as soon as possible.

The habit of fits once established cannot easily be broken, and the only way to prevent the continuance of much annoyance is, to separate those that are oftenest affected from the rest, and fatten them as soon as possible.

MEASLES.

This is an inflammatory disease, not always indeed discovered during the life of the animal, but plain enough after death, and very considerably diminishing the value of the carcase. The red and pimply appearance of the skin, or of the cellular substance between the flesh and the skin, sufficiently marks the disease. It shows that there has been general inflammation, either resulting from the fattening process being carried too far, or, much oftener, from the animal having too suddenly been taken from poor keep, and suffered to have as much as it will eat, and that of highly nutritious and stimulating food. It is very seldom or never fatal, but it may be generally recognized by the pink blush of the skin, or of some parts of it, and by the hog rubbing himself more than usual, while the skin is free from pimples and scurf. The remedy would be a less quantity of food, or of not so stimulating a character, and occasional doses of Epsom salts or sulphur.

MANGE.

Few domesticated animals are so subject to this loathsome disease as the hog when neglected and filthily kept; but in a well cleaned and well managed piggery it is rarely or never seen, unless some whose blood from generation to generation has been tainted with it, should be incautiously admitted. A mangy hog cannot possibly thrive well. His foul and scurfy hide will never loosen to suffer the accumulation of flesh and fat under it.

Except it is hereditary, it may, although with some trouble, be perfectly eradicated. The first thing is to clean the hog well: unless this is done all external applications and internal medicines will be thrown away. He must be scrubbed all over with a good strong soap-lather, and when he is well dried with wisps of straw he will be ready for the ointment, and no better one can be used than the Mild Ointment for Scab in Sheep (Recipe No. 14, p. 281). A little of this should be well rubbed all over him every second or third day. At the same time internal medicine should not be omitted. There is no animal in which it is more necessary to attack this and similar diseases constitutionally.

RECIPE (No. 2.)

Alterative Powder for Swine.

TAKE—Flowers of sulphur, a quarter of an ounce;
Æthiop's mineral, three grains;
Nitre, and Cream of tartar, half a dram:
Mix, and give daily in a little thickened gruel or wash.

This, like the scab in sheep, is a very infectious disease, and care should be taken to scour the stye well with soap, and afterwards with chloride of lime. The rubbing post, that useful, but too often neglected article of furniture in every stye, should particularly be attended to.

SORE EARS.

There are often very troublesome cracks and sores at the back of the large lop-ears of some breeds. If there is any disposition to mange, it is worse about the ears of these animals, and the mischief is sadly aggravated when brutes in human shape set every ferocious dog at the stray pig, and the favourite hold of which is the ear. The Healing Cleansing Ointment for Cattle (Recipe No. 7, p. 59), will most readily heal the sores.

PIGGING.

The sow usually goes with pig four months, but there is more irregularity in her time than in that of any other of our domesticated quadrupeds. A week or ten days before her pigging she should be separated from the rest, or probably the young ones would be devoured as soon as they are dropped; and if she shows any disposition to destroy them, or has ever done so, she should be carefully watched, a muzzle should be put upon her, and her little ones smeared with train oil and aloes as soon as possible.

The teats of the sow will sometimes swell, and hard knots may be felt in them as in the garget of cattle. The treatment should be nearly the same, except that bleeding is scarcely requisite. A dose of physic, however, is indispensable. The Garget Ointment for Cattle (Recipe No. 23, p. 96) may be rubbed with advantage into the teats, which should be carefully wiped or washed before the young ones are permitted to suck again; indeed they will not suck while any unusual smell remains about the teats. The milk should also be gently but well pressed out of the diseased teats.

When it is wished to spay a breeding sow, in order that she may be put up for fattening, it may be done while she is suckling. The young pigs may be cut at three or four weeks old; they should never be suffered to suck longer than two months; and they may be rung as soon as convenient after weaning. No hog should escape ringing, even if he is destined to live in the stye. It is the only way to keep him quiet, and will contribute materially to his thriving.

QUINSEY.

This disease in the hog is compounded of sore throat or enlargement of the glands of the throat, and is something like strangles in the horse, or inflammation and enlargement of the cellular substance between the skin and muscles under the lower jaw. The progress of the malady is rapid, and the swelling is sometimes so great as to hinder the breathing, and suffocate the animal. To a skin so thick as that of the hog it is useless to make any external application. The patient should be bled; two ounces of salts should be given, and half-ounce doses repeated every six hours, until the bowels are well opened; while warm weak wash, or milk and water should be occasionally poured into the trough. It is not often a dangerous disease if these means are early adopted.

COSTIVENESS.

This is not an uncommon complaint of the confined and fattening hog, and is easily removed by the Epsom salts, or by five grains of calomel being given every morning in a little of the animal's favourite food. It will be dangerous, however, to push this beyond the second or third dose, for the hog is very easily salivated. A dose of the Alterative Powder given every fourth day would be very beneficial, and would hasten the fattening of the styed hog that exhibited any disposition to costiveness.

ON THE

DISEASES OF POULTRY.

THE good housewife derives no inconsiderable profit from the sale of her poultry and eggs; but her fowls are sometimes sadly thinned by disease, and no one has yet condescended to offer a remedy for these maladies.

THE ROUP

stands first in frequency and in fatality, and particularly if the poultry are confined in close and dirty places, and ill-fed. The symptoms are swelling about the eyes, discharge from the nostrils, and drivelling from the mouth, at first limpid, but soon becoming purulent and stinking. It bears considerable resemblance to glanders in the horse: some have called it the glanders of poultry.

The farmer's wife often gives common salt for the roup, and with very good effect. It acts as an emetic. As much salt is dissolved in water as the water will take up, and then the proper dose for a middle-sized fowl is half a tea-spoonful. If the disease has been brought on by filthiness, there must be a thorough change of system; or if the fowls have been well managed, and this disease accidentally appears, the eyes and the head must be well cleaned morning and evening. Some use weak Goulard wash for this, but warm water will be quite as effectual.

Fowls with the roup should be kept in a warm, but not a close and ill-ventilated place. Neglect and exposure to cold will almost certainly make the disease fatal.

As for medicine, little, I fear, can be done. The white antimonial powder given in doses of a grain morning and night, mixed with a little sopped bread, or any thing that the fowl will pick, is often very beneficial. Country people have their own nostrums. The best of them is garlick and rue, beaten into a mass with butter, and crammed down the throat of the fowl. It often seems to do wonders. The garlic is a useful medicine in cough, and in almost all inflammatory affections of the chest in every domesticated animal. Some give a strange mixture of rue and brick-dust, mixed together with a little butter. This, too, is thought to be almost infallible; but whether it is owing to the mildly stimulant effect of the rue, or the mechanical one of the brick-dust, which may assist the imperfect trituration of the food in the gizzard, or whether the brick-dust assists in the expulsion of the worms which often accompany the roup, and with which the entrails of the bird are sometimes absolutely clogged,—whatever be the cause the effect cannot be denied—it really does good.

The roup is not confined to fowls; it frequently attacks every inmate of the yard. In the *duck* it is very rapid in its progress, and exceedingly fatal. Among geese it is known by the name of *gargle*, and garlic and butter is accounted a sovereign remedy. Even pigeons do not escape its attack. It is characterized among them by the same symptoms,—discharge from the eyes and nose, disinclination or inability to feed, moping about, and gradual wasting. The garlic and rue are the medicines here used, and certainly with success. I have occasionally forced a small portion of horse cordial ball, a very excellent medicine, and especially if there is not any great degree of fever. After all, however, it is a very fatal disease, but has yielded to the antimonial powder oftener than to any thing else.

There is no doubt about the contagiousness of the roup, and the sick fowls should at once be separated from the healthy ones. Where many poultry are bred, there always should be a place set apart for the sick fowls, and into which they should be removed the moment they appear to be affected with any serious disease. This place should be more than usually warm.

There is another disease sometimes accompanying this—catarrh, or *poultry glanders;* at other times being unconnected with it, and in fact being of a very different nature, and which is also known by the name of the *roup*. The fact is (and it causes a great deal of confusion), that the term *roup* is applied to almost every disease to which poultry are liable. This is a disease of the rump.

It is well known that there is a little tubercle or projection on the rump of every bird, and which is filled with oily matter; its use is to smooth and give a glossy appearance to the feathers, and more particularly to make them *water-tight*. When rain is coming every bird is diligently employed in squeezing out the greasy fluid, and rubbing it over the whole surface of his feathery coat, and then the drops of rain trickle off without penetrating through, or in the slightest degree inconveniencing him.

This oily reservoir is subject to occasional inflammation; either the oil is secreted faster than it is wanted, and so distends and irritates and inflames the little sac which contains it, or the orifice through which the oil naturally exudes becomes closed, and thus it accumulates and does mis chief. The whole rump soon becomes inflamed and enlarged. The bird suffers a great deal of pain, and sits moping and dull, with his feathers staring, but the appearance of the feathers of the rump is most of all changed; they stick out in every direction, and the quill part of the feathers becomes filled with blood, being fed from the inflamed part.

The remedy here is simple. It is all loss of time to foment, or to apply goulard or any cooling washes; the tumour must be opened at once, and the collected oil, now become purulent and diseased, squeezed out. A little cleanliness afterwards will usually perfect the cure, or if the wound does not readily heal, a little tincture of aloes may be applied.

THE PIP.

This is a very singular disease, evidently accompanied by considerable fever, like the blain in cattle, which was described at page 115: a pustule or bladder rises near the tip of the tongue, which after a day or two breaks and dries, and a white skin or scale remains, still, however, continuing very sore, and preventing the bird from eating, and which sits in some corner rapidly pining away. If the mouth is washed two of three times with a mixture of equal parts of tincture of myrrh and water, it will soon heal. Country people rub a little kitchen salt over the sore, and it has a very good effect. If the *pip* is neglected, the fowl will too often die, but a great deal more from starvation, on account of being unable to eat, than from the influence of disease.

It is often difficult to point out the precise cause of this malady, but it is generally referable to bad management, like most of the diseases of domesticated animals. Filthiness, unwholesome food, and foul water, are very likely to produce it.

THE FLUX.

This is a very common complaint, and mostly among young fowls. When it is neglected it brings them down and destroys them almost as speedily and as certainly as the scouring of calves or lambs, but it is a great deal more manageable; and the fault is to be attributed entirely to the person who looks after them if many of them die. It is brought on by various causes, and oftenest by too soft food. Potatoes will often cause it, and yet, given in moderate quantities, boiled potatoes are both economical and fattening. Any soft food that has become sour will almost certainly produce purging in chickens and young fowls.

In the majority of cases all that is to be done is to change the food. Give whole wheat, more especially give whole rice; substitute rice-water for the common water, and if the purging is still obstinate, make little balls of prepared chalk, carraway powder, and syrup of white poppies, and force them down the throat. Too much of this, however, must not be given, lest an opposite complaint should be produced.

CROPSICK AND CONSTIPATION.

Fowls are very subject to obstructions in various parts of the digestive canal. First, in the crop, which sometimes gets filled almost to bursting. This is sometimes the case when new corn is given, and oftener when the fowl has got at too many beans. Either the crop is so crammed that it cannot contract upon its contents and force them on, or the corn or beans are so swelled as scarcely to be able to pass on. This will be discovered by the dullness of the fowl, and by the fullness or hardness of the crop.

Medicine will here be comparatively useless; the fowl must be mechanically relieved, and there are two ways of doing it. The food cannot be forced on, for the peculiar structure of the craw prevents it; but it may now and then be forced back again. If the crop is gently pressed, and in an upward direction, the corn or the beans may be forced out of it one by one into the gullet, and then the gullet being stroked upwards, the corn may be returned by the mouth. When the crop is half empty a little rue and butter, or, what is far preferable, a little horse cordial ball may be given; thus the crop may be stimulated to contract upon its contents, and the work of digestion may again go on well.

When this mode of relief has been fairly tried, and none of the contents of the crop can be returned without violence, which must never be resorted to, the crop itself may be opened. It is an insensible kind of stomach or reservoir, like the paunch of the ox, and will bear a great deal without serious consequences. A little slit may be made into it near the bottom; the contents may then be pressed out, and if the edges of the wound are brought together by one or two stitches, they will readily unite: the fowl should then be kept on somewhat soft food for a few days, and all will presently be well. Obstruction, however, is often lower down; it is in the bowels, like the constipation of other animals, and must be treated in the same manner, except that the costiveness may here be generally conquered by food alone. Dry corn must be withheld, and bran or pollard must be mixed with a little greasy hot liquor, and given to the fowl. In the majority of cases this will be enough; but if the obstruction should continue, a little sulphur may be added; and, that failing, calomel, but in very small quantities, so that the bird shall not get more than a grain in the course of the day, and even this not continued longer than absolutely necessary.

CHIPPING.

This is a singular and a fatal disease among chickens of three weeks or a month old. Their feathers begin to stare, and stick out in every direction ; the bird creeps into a corner, and there sits, all of a heap, uttering a short and melancholy *chirp*, whence, perhaps, the corruption of the word, chipping. It can scarcely be induced to move or to eat ; the rapidity with which it loses flesh is almost incredible ; it continues the same unvaried cry, and sometimes in two or three days, or, at other times, the process occupies a week or more, it pines away and dies.

It is evidently some disease of the digestive organs, either of the stomach or bowels, and generally caused by food, which disagrees with the chicken : sometimes it proceeds from exposure to cold and wet ; for these little beings are very tender, and the neglect of one or two days will lay the foundation for this and other fatal complaints. The first thing is to remove them to a warm place, the warmer the better : they should sometimes be put into wool or flannel : some good thick gruel should then be made, to which may be added an eighth part of the following mixture ; one ounce of castor oil and a quarter of an ounce of syrup of ginger. The chicken should be forced with this several times a day, so that it shall get half a teaspoonful of the mixture in the course of the day. On a bright, sunshiny, day, the little patient will get more good from the warmth of the sun than from any heat artificially applied. Very few, however, who are once seized with this chipping, escape, unless they are taken in time, and carefully nursed. Split grits will constitute the best food when the bird begins to recover, and all slack and watery food, whether consisting of soaked bread or potatoes, must be avoided. This is improper for chickens at all times: it is pernicious to them now. If the weather is cold they must be taken a great deal of care of, for there is not a disease of the fowl which is not aggravated, if not occasionally caused, by damp and cold.

BLINDNESS.

This is a disease of not unfrequent occurrence; generally connected with the *roup*, but sometimes being pure inflammation of the eye itself. There is cloudiness of the eye, or ulceration of it or of the lid, or sometimes enlargement not only of the lid but of the eye itself. If it is connected with the *roup*, that disease must be principally attacked, and as the fowl recovers from the *roup*, the eyes will get well. If the eyes alone are affected, they must be frequently fomented with warm water, and afterwards a few drops of very diluted laudanum introduced between the lids. The best proportion will be a tea-spoonful of laudanum to a tea-cupful of water.

Dependent, however, as this disease generally is on others, it is often surprising how soon the eyes will clear up if the simplest means are adopted. When the eyes have been closed up with mucous matter, and the chicken could scarcely see at all, or was apparently blind, I have known nothing more done than to clean out the coop well, or to remove to a little warmer, but yet an airy place, and to give a few split grits ; and in two or three days the fowl could see as well as ever.

VERMIN.

These are often exceedingly annoying to the poultry, and materially prevent their growing and fattening. They are usually to be traced to evident neglect in the management of the poultry-yard. The fowls are half-starved, or the place is all over filth, or there is no dry corner with plenty of dust or ashes in which the birds may roll themselves. I do not know any application that can be used with safety for the destruction of the vermin. The only remedies are good food and cleanliness, and when the causes which encourage the multiplication of the vermin are removed, the fowls will take care to keep them under by diligently picking them out. No poultry-yard should be without a corner for dust and ashes ; and there is a caution which should be deeply impressed on the farmer, that his poultry, and especially if they are not well fed, should not be too much encouraged about the stable, for the vermin of the fowls are easily communicated to the horses, and produce an itching

than any mange.

WOUNDS.

These arise principally from fighting. The young birds will not be quiet until they have ascertained which is the master. This is not easily settled, for they will often fight on until the head is one sore, and they are perfectly blinded. After the head has been carefully washed with warm water, to get rid of any dirt or gravel, the Healing Ointment recommended for cattle (Recipe 7, p. 59), will be the best application. If there should be very considerable swelling, a few drops of laudanum may be added to a tea-cupful of warm water, and the head well bathed with it two or three times in the day, the ointment not being applied until the swelling is subsided. Sometimes a considerable quantity of fungus will sprout from the sore heads, which must be got rid of before the wounds will heal. The most effectual application for this, and that which will give the bird least pain, is two drachms of burnt alum, rubbed to a fine powder, and mixed with an ounce of honey. A little of this liniment may be smeared over the fungus twice every day until it is subdued, and then the healing ointment may be applied.

MEGRIMS, OR GIDDINESS.

Many promising chickens are lost in this complaint. Without any kind of warning they fall, roll on their backs, and struggle for a minute o two, when the fit goes off, and they rise stupid and giddy, and slowly return to their food. One fit having occurred is soon followed by others, each more violent than the preceding, until at length the little animal staggers about, half unconscious, refusing to eat, and rapidly wasting, and soon dies convulsed. In some cases the megrims occur when the fowl is poor and half-starved; but then the food has been improper; it has been watery, or disposed to fermentation; diarrhœa has followed, and the fits are the consequence of intestinal irritation. Other young fowls will have occasional fits from which they will rapidly recover and appear to be little or nothing the worse.

The megrims must be stopped as soon as possible. Castor oil and syrup of ginger will be a very good medicine, and be much improved if a quarter of an ounce of the syrup of white poppies is added to it. The fowl that once has had megrims should be confined for some days, but in a tolerably large place, where it may obtain some degree of exercise.

DISEASES OF THE FEET.

From being cut with gravel or glass, and much oftener from living in filth, the feet of poultry become sadly diseased. Thickening of the skin about the joints is first observed, and that increases, and becomes scaly and scurfy, and hardens, and at length is quite bony. The joint becomes stiff, ulcerations commence, which spread, and frequently a kind of canker follows. The only remedy is to pare off the scurfy or callous substance to the very bottom, even although it should reach to the bone, and then lightly to touch the exposed surface with butyr of antimony, or lunar caustic, repeating the caustic as often as there is any fresh sprouting.

DISEASES OF RABBITS.

These depend altogether upon mismanagement. If a fair quantity of good clover hay, with a little corn, or perhaps some brewer's grains, is daily given, they will take no harm, although they are half fed with the refuse of the garden, provided cabbages do not form too great a proportion of the green meat. If much cabbage is given, or putrid vegetables, they are subject to have *inflamed liver*, and to become *pot-bellied*. Watery food seems to produce almost the same effect upon them which wet pastures do on sheep. Medicine will be thrown away here. Good dry food, hay, corn, and bran, are the only remedies when the rabbit gets pot-bellied, and at the same time falls away in flesh; and even that will not avail if the disease has proceeded too far. There are plenty of weeds in almost every hedge, and particularly the dandelion and the sow-thistle, on which rabbits might be more than half-fed without much expence, and with no danger.

When scurfiness or mange accompanies the enlargement of the belly, the sooner the animal is destroyed the better, for there is no hope of a cure, and this mangy eruption soon becomes contagious.

Rabbits are subject to a highly infectious disease called the *sniffles*. It is a constant sneezing, with a profuse discharge of mucus from the nose. It will continue for some weeks without seeming materially to affect the health of the animal, and then, all at once, the rabbit will speedily lose flesh and pine away, and die. It is produced by keeping too many rabbits in a close, ill ventilated place, and especially if it is damp, and they are badly fed, and rarely cleaned. If a sniffled rabbit once appears among the hutches, the majority of the inhabitants of them will be destroyed. The best way is to kill every one that seems to be in the least degree infected; to wash the hutches well with chloride of lime, and to have a new stock. If any thing is done, one or two grains of powdered blue vitriol may be given morning and evening in the bran, or in a mash.

A LIST OF DRUGS

FOR THE USE OF THE FARMER AND COUNTRY VETERINARY PRACTITIONER; WITH THE PURPOSES TO WHICH THEY ARE APPLIED, AND THEIR DOSES FOR CATTLE, SHEEP, AND SWINE.

Ægyptiacum. A mixture of verdigris, vinegar, and honey, sometimes used for foul in the foot in cattle, when there is not any fungus, or proud flesh, to require the use of the butyr of antimony.

Æthiop's Mineral. Occasionally used as an alterative in mangy affections.

Aloes. Rarely wanted in cattle, or sheep, or swine medicine, except that in the form of tincture, made by infusing two ounces of the powder in a quart of proof spirit, it is a very excellent balsamic application for wounds, both recent and old. The addition of half an ounce of powdered myrrh will materially improve the tincture. As a purgative, aloes are very uncertain, and often irritating. Some young beasts have been destroyed by an over-dose of aloes.

Alum. An ingredient in alum whey for the cure of diarrhœa in cattle; not so useful, however, as an astringent as the catechu or kino.

Anise-seed. The powder makes a good carminative, but far inferior to ginger or carraways. The oil is used to give a pleasant scent to a great many cattle medicines.

Antimonial Powder. One of the best fever medicines for swine in union with digitalis and nitre. The dose is about six grains. It is very nearly the same as James's Powder, and is quite as useful.

Arsenic. Used only in the composition of a wash for the scab in sheep, but not always safe.

Basilicon. A very useful digestive ointment when a wound is not disposed to heal readily.

Blue Vitriol. Equal parts of it and the sugar of lead will make a mild caustic powder to sprinkle over sores that will not heal readily. A solution of sulphate of copper in the proportion of a drachm to an ounce of water, is a very good lotion either for recent wounds or old sores. A drachm of the blue vitriol rubbed with, and dissolved in a little gruel, is sometimes very useful in long continued discharge from the nostrils in the ox. In doses of one or two grains it has sometimes removed the sniffles in rabbits.

Bole Armenian. A mild astringent, sometimes used with advantage, either as a powder or made into an ointment, for slight cases of foul in the foot, and foot rot; and also for grease in cattle.

Buckthorn. Occasionally used in combination with castor oil, and particularly in red-water.

Burgundy Pitch. An ingredient in the charges for old strains and lameness; but scarcely better than common pitch.

Butyr, or *Chloride of Antimony.* One of the best caustics for foot-rot, foul in the foot, cankered feet, and for almost every purpose. It is very manageable, and the change of colour in the part accurately shows how far it has extended, and what effect it has produced.

Calamine. A preparation of zinc, and which forms the basis of the best healing ointment that can be made.

Calomel. The submuriate of mercury, and rarely used in cattle, except in suspected disease of the liver. In jaundice it is given in combination with opium. It is a medicine that does not seem generally to agree well with cattle. For pigs it is a useful purge, when they cannot be induced to take Epsom salts in their swill or milk, because it lies in a small compass.

Camphor is used in cattle practice as entering into the composition of a very useful embrocation for rheumatism, and old swellings and sprains. The oil of camphor is a good application for rheumatism connected with old sprains.

Canella Bark. A tonic and aromatic, but not generally equal to the gentian and ginger combined.

Cantharides, or *Spanish Flies.* These are the basis of all our blisters. Corrosive sublimate and euphorbium, and all the cruel caustics of the farrier may be laid aside if the flies are good, and a sufficient quantity of them allowed. If four pounds of lard, and one pound of resin are melted together, and one pound of the Spanish flies finely powdered are stirred in as the mixture begins to cool, there cannot possibly be a better blister for any purpose. A pound of powdered flies infused in a gallon of spirit of turpentine, will make a good liquid blister to sweat down old strains or swellings. This may be lowered as required with two or three or four times the quantity of spermaceti or neat's-foot oil.

Carraway. This, next to ginger, is the best aromatic we have; in some respects it is even preferable to ginger, for it is not so stimulating. An ounce of it added to a pound of Epsom salts will prevent griping, and render the medicine more certain in its operation. The farmer or farrier, however, should be careful of whom he buys his carraway powder, for in too many instances the oil is extracted from the seed before it is pulverised, and the powder is comparatively worthless.

Carrots. I insert these in the list of drugs, for they constitute the best medicine that can be given, either when the animal is slowly recovering from severe illness, when he has much cough, or considerable humour or foulness about him.

Castor Oil. A safe and useful purgative for cattle, sheep, and swine, when there is much obstruction, and the bowels are in an irritable state. It is, however, a very dear one, and in the majority of cases linseed or neat's foot oil would do quite as well; or we may, perhaps, truly affirm, that the cases will be very rare indeed in which the Epsom salts or sulphur might not be administered without the possibility of danger.

Catechu. A very useful astringent in cases of diarrhœa, and united with chalk, opium, and ginger. The dose for cattle would be two drachms, and proportionably less for sheep and swine. It should be finely powdered, and administered in thick gruel.

Chalk. There are few cases of illness in any of the animals of the diseases of which this book treats, in which there is not considerable acidity in the stomach or bowels. Chalk is useful as being an alkali, and combining with it, and neutralizing it. It should form a part of the cordial and astringent medicine of all young animals. From half an ounce to an ounce will be a dose for a cow;

a drachm would suffice for a sheep or hog. It should, however, generally be accompanied by opium, and always by carraways or ginger.

Chamomile. A very useful mild tonic, when either the ox, sheep, or swine, is beginning to recover from serious illness. It should be combined with carraways or ginger. The dried flowers reduced to powder are alone used.

Charcoal is an excellent ingredient in every poultice applied to a foul and stinking ulcer, and particularly in grease, and foul in the foot, and foot rot.

Chloride of Lime, very lately introduced into veterinary practice, but invaluable as a disinfectant. In the malignant diseases of cattle it is exceedingly useful as a lotion, and equally so given inwardly when the disease is beginning to assume a putrid character; but its grand use is freeing the stable and the cowhouse and the harness from infection of every kind. If they are thoroughly washed and scoured with it there is an end to all danger, whatever may have been the disease. The farmer and the farrier will soon appreciate its value in this respect, and never be without it. It is best kept in the form of powder in a closed jar, and half an ounce of it dissolved in a quart of water will give sufficient efficacy to the fluid both as a wash and a drink.

Clysters. The use of the clyster is not sufficiently estimated in securing and hastening the operation of purgative medicine, and rendering it unnecessary to give any great or dangerous dose of it. Epsom salts or common salt, dissolved in thin gruel, or even in warm water, will constitute an excellent clyster; the quantity may be half a pound of either. Reid's pump is an excellent instrument for administering a clyster.

Colombo. A good stomachic and tonic, but not equal to the gentian.

Cordials. These are dangerous things in cattle practice, and should never be administered while the slightest degree of active fever remains. The farrier and the farmer are a great deal too fond of them, and destroy many an animal with them. Ginger and carraways are the best. The common *cordial powder* of the druggist should never be bought or used: it is composed of the very sweepings of the shop, heated by capsicum or pepper.

Corrosive Sublimate. This forms the basis of an excellent wash for mange, scab, &c., as may be seen by reference to those diseases. It is also a good caustic, but almost superseded by the butyr of antimony. It is sometimes used, exceedingly diluted, to remove cloudiness from the eyes.

Croton Tiglii. A powerful purgative when other things have failed, and may be given to cattle in doses from ten grains to a scruple of the farina or powder of the seed. It is, however, a dangerous medicine; it is a kind of last resort; and they who, fond of new things, are beginning to use it upon almost every occasion, will assuredly have reason to repent of their rashness.

Digitalis, or *Common Fox-glove.* The powdered leaf, dried in the dark, and preserved in closed opaque bottles, is used. Its immediate effect is in lowering the action of the heart, and it speedily produces a very singular intermittent pulse. It is invaluable in all cases of fever, and given in doses of from half a drachm to a drachm it can never do harm. It is combined with emetic tartar and nitre for the ox, and antimonial powder and nitre for the swine. Its secondary effect, and that not often very marked, is that of a diuretic. An infusion of it or the diluted tincture, are very useful in abating acute inflammation of the eyes; a little of it should be got into the eyes.

Drinks and Drenches. Medicines for all the animals treated of in this volume must be administered in the form of a drink; for by this means alone can they be sent into the abomasum, or true stomach. A ball will fall into the rumen or paunch, and it must mix with the food contained in that stomach, and be returned to the mouth in the act of rumination, before it can find its way to the real stomach and the intestines generally. This has been sufficiently explained in the introductory chapter.

Elder. Elder leaves are sometimes boiled in lard, to make it more than usually emollient; but it is doubtful whether this effect is produced to any great degree.

Emetic Tartar. This, on account of its nauseant property, and also from its determining to the skin, and increasing the insensible perspiration, is a valuable medicine for cattle and sheep in fever and in all affections of the chest. The dose is from half a drachm to a drachm for cattle, and one-third of the quantity for sheep.

On the stomach of swine it acts as an emetic; and in combination with calomel forms the best emetic that can be given.

Epsom Salts (Sulphate of Magnesia). There is not a more valuable purgative than this. It is always effectual except in the obstinate costiveness which attends fever, and it is always safe. The average dose is about a pound for cattle, and an ounce for sheep or swine. There is this convenient circumstance about it, that it will dissolve in its own weight of warm water.

Extract of Lead, or *Goulard's Extract*. Some practitioners use it, lowered with 16 or 20 times its quantity of water, for contusions and sprains. It is quite thrown away here. It can produce no effect through the thick skin of the ox. Its only use is in a form of much greater dilution (one drachm to a pint), as an application for inflamed eyes, or any inflamed surface.

Fomentations. If the good effect of these was sufficiently known, many of the strange and injurious applications to wounds, and sprains, and bruises, would be laid aside. The virtue consists in the warmth of the water; and the poppy-heads, and chamomile flowers, and marsh mallow roots, and many other ingredients are perfectly thrown away.

Gentian. The very best of the vegetable tonics; almost the only tonic that should be admitted into cattle practice. It is stomachic and strengthening, without increasing the action of the heart, or endangering the return of fever.

Ginger. The very best of the aromatics, and in a manner superseding all the rest. Carraways may be admitted in purgative drenches, but all the other heating spices of the farrier and the druggist may be discarded.

Glauber's Salts (Sulphate of Soda) may be used when the Epsom salts cannot be got at, but they are not so certain; they are apt to gripe, and they require three times the quantity of fluid to dissolve them. When they are long exposed to the air they fall into a powder, half the quantity only of the powder should be used. The medium dose of the chrystal is a pound.

Gruel. Many a cow has been saved by the horning down of plenty of good gruel when she was rapidly getting weak, yet would not eat. It should, however, be simple gruel; not a drop of ale or gin can be allowed when the gruel is administered for this purpose.

Guiacum. A gum resin, getting much out of use, and employed only in rheumatism, or sometimes in [illegible] affections.

Hartshorn. An ingredient in the stimulating embrocation, and there only used, except in [illegible] of the [illegible], when it is a useful application.

Hellebore (Setter). An excellent substitute for the tow or tape in setons. It produces as much inflammation and swelling as could be desired. This is of some importance when a blister can so seldom be made to act on the thick and insensible skin of the ox. The dock-root makes a better seton than the tow or tape on account of its stimulating property, but it is inferior to the hellebore.

Honey is with many a favourite substance in the composition of drenches. These sweet things should not be used: they increase the acidity otherwise too often found in the stomach or bowels.

Iodine. This metal has been very lately introduced into cattle practice, but it is a very efficient one in lessening or removing the tumours to which cattle are so subject. It is used in the form of an ointment, rubbed on the tumour, while a drachm of the tincture is given daily in a little gruel. The form under which it enters into the ointment is that of the hydriodate of potash.

Ipecacuanha. This is only used in its combination with opium under the name of Dover's powder, in the rheumatism of cattle; the dose is half a drachm.

Iron is the only metallic tonic that is admissible in cattle practice. The green vitriol, or the tartrate of iron are the best.

Kino. An astringent much dearer than the catechu, but not more effective.

Lead. Both the white and the red lead are used when sheep are struck with the fly. See the article Flies.

Linseed. The infusion of linseed (linseed tea) is a very useful drink, either mixed with the gruel, or given alternately with gruel in severe catarrh and sore throat; and *Linseed meal* forms the best of all poultices. *Linseed oil* is as good a purgative as castor oil, and a great deal cheaper.

Liquorice. The farriers and the farmers are fond of it, and therefore it is sometimes used. It is at least harmless, perhaps it is slightly expectorant.

Mashes. These are mostly used for the food of the sick animal. They may be made of bran, or bran and linseed, and occasionally with a little oats or malt. More care should be taken in preparing them in a cleanly way, and free from smoke, than the cowherd or the farrier will always condescend to bestow.

Mercurial Ointment. The diluted mercurial ointment is one of the best applications for the scab; and mange in all the animals here treated of can scarcely be removed without a portion of it. The proportion, however, should be carefully adjusted, for there is danger of salivation, and all the precautions should be adopted which are recommended under the various cutaneous affections for which it is applied.

Myrrh. A valuable addition to the tincture of aloes, making it more active, as well as balsamic.

Nitrate of Silver. The best of all caustics when animals are bitten by rabid dogs. It should be sharpened to a point, and then may be brought into contact with every part of the wound.

Nitre. An excellent ingredient in the fever drink. It is cooling and diuretic. The dose will vary from two to four drachms for cattle, and from a scruple to a dram for smaller animals.

Nitrated Ointment of Quicksilver. Occasionally used, considerably diluted, for foul ulcers, and for ulceration about the eyelids.

Oak Bark. A useful astringent in combination with catechu, chalk, and opium, in cases of diarrhœa. A decoction of it may be applied with advantage to old unhealthy wounds with profuse discharge.

Opium. This is a necessary ingredient in all astringent medicines. It acts as an astringent by allaying the irritation about the mouths of the vessels: producing this effect it is, in a manner, the sheet anchor of the practitioner. It is given internally in cases of tetanus. Externally applied it forms an ingredient in the rheumatic embrocation, and the diluted tincture (laudanum) affords great relief in inflammation of the eyes.

Origanum. The oil of origanum is used as a stimulant, and because it possesses a pleasant smell, and thus conceals other disagreeable ingredients.

Peppermint. The distilled water of peppermint is a very convenient menstrum for the exhibition of astringent and carminative medicines. The cordial drink of sheep and calves should not be given without it.

Poultices. Those composed of linseed meal are the best. Bran poultices soon become dry and heating. Carrots and turnips make desirable soothing poultices, and especially where there is much unpleasant smell. If the smell is very offensive a little of the chloride of lime should be added. Nothing stronger than common turpentine should be admitted into any poultice, and that only in a small quantity, and when the ulcer is very foul.

Resin is used to give consistence to some ointments, as well as to make them slightly stimulant. The powdered resin is diuretic, and is the best form under which turpentine can be used for this purpose.

Rhododendron. An aromatic tonic, used occasionally in obstinate rheumatism.

Sal Ammoniac. Occasionally used in solution as an embrocation, and particularly in sore teats.

Salt. The common kitchen salt is a most useful article. It forms a good purge in doses of a pound, but it should not be used for this purpose when there is any degree of fever, for it has also tonic and stomachic properties. On this account it is so useful, mixed with the food of all animals. It gives a pleasant taste to the food, and induces them to eat that which would be otherwise refused and useless, and it materially assists the digestion. It is said to be a preservative against the rot; that it has this effect to a considerable extent is certain, and it is the basis of every medicine that has power to delay the progress of the rot, or, when attacked in an early stage, to cure it. Externally it is an excellent discutient, a hardener of sore places, and an abater of inflammation.

Spirit of Nitrous Ether. An excellent tonic, and at the same time a sedative, when the animal is recovering from severe disease. It is likewise slightly diuretic.

Squills. Expectorant, but possessing no great power.

Sulphur. This is a mild aperient, and is preferable when it is intended to have an alterative effect, but is not so desirable in cases of fever. The dose is about eight ounces. It is the basis of most of the ointments that have any effect in the cure of mange. The flower of sulphur should be used, and not the *black sulphur*, which is the mere refuse, and often impregnated with arsenic.

Tar is useful in digestion and cleansing ointments. It is an almost invariable ingredient in every ointment that is used about the feet. For the bruised feet of working oxen, a mixture of tar and grease, and a little pitch, is an admirable ointment or stopping.

Tobacco. A decoction of it has been used for the cure of scab (see Scab), but it must be applied with caution, and is almost superseded by better things.

Balsam of Tolu. Once celebrated as a pectoral medicine, not, perhaps, without some effect, but that may generally be dispensed with.

Turpentine. Common turpentine is an ingredient in every digestive ointment. The Venice turpentine is a little, and yet but scarcely superior to it. Oil or spirit of turpentine is used in the composition of "Liquid Blister;" it is an ingredient in the rheumatic embrocation, and is given internally in colic, and for the destruction of worms in the bronchial passages of young cattle.

Verdigris. A useful ingredient in the caustic astringent powder for the foot rot.

Vinegar is useful in embrocations, but its employment is very limited in cattle practice.

Vitriol, Oil of (Sulphuric Acid). Occasionally given as a tonic, very much diluted, but its use as a caustic is superseded by the butyr of antimony.

White Vitriol. A solution of it is sometimes an efficacious wash for indolent wounds and ulcers, and for ulcers of the feet particularly. A very weak solution of it is used in inflammation of the eyes, when the inflammatory stage is passed over, and weakness, or cloudiness, or some ulceration remains.

Wax is used simply to give consistence to some ointments.

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